VOL. LXXVIII., NO. 2970.—SATURDAY, JANUARY 6, 1900.

THE BUILDER

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The New Year.

IN offering all our readers our best wishes for the New Year, let us add that we trust none of them are among those misguided persons who imagine that this is the commencement of a new century. The question has been brought into prominence by a rather foolish correspondence in the leading daily paper; but though it is quite true that the first change in the notation of hundreds from 18 to 19, in the dating of all documents and publications, is calculated to specially attract our attention and to make us philosophise on the lapse of time, it is no less true (in spite of the German Emperor) that the year 1900 is simply the closing or winding-up year of what we have all our lives spoken of as the "nineteenth century"—the end of that period of one hundred years, not the commencement of a new hundred. The twentieth century commences with the first year after 1900, and those who cannot see that must be destitute of the first elements both of arithmetic and logic.

Having disposed of this point, we trust our readers will pardon us if our next word is not immediately of architecture and building. This is a professional journal, it is true, and is specially interested with the subjects which concern the profession ("or art") of architecture, and the business of building. But there are times when it behoves all Englishmen to remember that they are Englishmen in the first instance, and architects, engineers, builders, or whatever else may be their calling, in the second instance. The new year finds our country engaged in the most serious war which has been on our hands for nearly half a century; a war which has not only assumed unexpected difficulties and magnitude, but the upshot of which, though it is being waged at a great distance from our shores, is not merely of local consequence, but is absolutely momentous for the future of this country, involving as it does the whole question of our standing and prestige as a first-class and Imperial Power. As Mr. Birrell put it, no less truthfully than dramatically, if we are not successful in this struggle in South Africa, we may as well put up the shutters in Downing-street, and write up a notice, "Business no longer carried on at this address." This journal has always, as a matter of course, kept entirely clear of party politics—they are no business of ours; but this is something wider and more far-reaching than mere politics: it is a question of the greatness and the influence of our country before the whole world. Of the ultimate issue of the war we do not indeed feel any doubt—it would be almost treason to one's country to feel any, at all events to give utterance to it; but we think it is only right that men of all professions should at this juncture realise, and should be encouraged to realise, that for the moment there is something more at stake for us than any questions of art or profession; and that those who sit at home in their offices—not perhaps always "at ease," for most of us have our own special and private worries—should bestow some of their thoughts on the many brave men who are at this moment facing hardship and death in doing their best for their country. And here at least all Englishmen may have cause for pride; for if we have lately been two or three times unpleasantly reminded of Tennyson's famous line—

"Some one had blundered,"

we have at least had gratifying evidence that the courage and devotion which carried out that immortal blunder at Balaclava are still to be found among our fighting fellow-countrymen.

Nor is this subject of the war entirely unconnected, after all, with the subject of architecture. During such a struggle, art is necessarily neglected; after a successful war it receives a new impulse. More especially

is this the case with the art of architecture, since it involves the expenditure of a large amount of capital, which people are not inclined to invest in building while the country's welfare is in an uncertain state. All history, ancient and modern, shows us that a building age comes after a successful war; funds are let loose again, national satisfaction blossoms in the shape (among other things) of public buildings;

"—— O'er the white palace-front
The interrupted scaffold climbs anew."

There will be a great deal of new building done in Pretoria, before very long, we may be sure, by some one. Let us hope (or rather assume) that it will be done by English architects, as the great engineering work on the Nile is now being carried out by English engineers. Nor would the fortunate influence be unfelt, probably, in the architectural embellishment of our own capital.

ST. SOPHIA, CONSTANTINOPLE.

BY ARTHUR E. HENDERSON, OWEN JONES TRAVELLING STUDENT FOR 1897.

BY the reign of the Emperor Justinian, A.D. 527-565, the Eastern Church had settled down as regards its Creed and Ritual, excepting the controversy as to the use of pictures, which was not finally settled until 842. Hence the arrangements found in the Church of St. Sophia were determined by the ceremonial prescriptions of Eastern orthodoxy, just as the design of a Latin church is influenced by the demands of the Latin ceremonial.

A church of the Orthodox Communion was divided into six parts — the court (atrium), the entrance corridor (narthex), the nave (naos) and aisles, the gallery above the narthex and aisles (gynæceum), and, lastly, the sanctuary (bema), containing the Holy Table, behind which, as subordinate adjuncts, were the central apse (apsis), with the clergy stalls, the northern apse (prothesis), used as a sacristy and as the starting point for processions, and the southern apse (diaconicon), in which the sacred vessels were kept. At public worship the men occupied the nave except its eastern portion, where the choir stood. The galleries were set apart for the women. The aisles were generally common to both sexes for the private adoration of the pictures and relics of saints, with which these portions of the church were furnished.

One other noticeable feature of an Eastern church was orientation. The axis of St. Sophia is between 30 deg. and 35 deg. south of east, and thus on a line with sunrise on the dedication day of the church, at Christmas-tide.

The Emperor Justinian, after he had suppressed the Nika riots of January, 532, which nearly cost him his throne, and deluged the arena of the Hippodrome with the blood of 30,000 citizens, and burnt down St. Sophia, with the whole district around it, decided to appease his subjects by building anew the Church of the Divine Wisdom of the Incarnate Word, in a fashion that would make it worthy of the capital of his empire, and cause it to eclipse all sacred edifices ever erected, including the glorious Temple of King Solomon. Fortunately for posterity, he succeeded in obtaining the services of an architect whose name will never die—Anthemius of Tralles, who was assisted by Isidorus the Milesean. Anthemius evolved for a Greek sanctuary its ideal design, giving a wide, open floor space for the men, and great gallery frontage for the women.

The present building, the third on that site, was commenced on February 23, 532, only forty days after the fire which had destroyed its immediate predecessor. The Emperor himself presided over the laying of the foundation-stone, the dedication taking place on December 26, 537, with great solemnity. The erection must have been pushed forward at an almost incredible speed; for the immense quantity of materials required for the purpose were brought and put together in the short space of five years and ten months. No wonder that during the course of its erection the building settled unevenly, bearing down heavily upon some of the columns and causing portions to scale off. To rectify this the Emperor ordered the portions of the work that were giving way to be taken down, where they touched the arches, and to be replaced after the damp had thoroughly left the fabric. Again, the supports, which may have been a thin wall carrying the centring to the eastern great arch, "split open and seemed as though before long it would fall to pieces." But, fortunately, the Emperor showed his commonsense by ordering the arch to be completed quickly, thus throwing the weight on its haunches instead of on the centring. This, I agree with Mr. Phené Spiers, was what really occurred, and not that the great piers split, as the words of Procopius seem to suggest.

The materials are squared stones for the great piers, marble for the flooring, columns, window linings, door jambs, &c.; the rest of the building was brickwork covered on the interior with marble sheathing and mosaic. Unfortunately much of the latter is now only plaster and paint. The exterior was probably plastered and the domes were covered with lead. The main features of the design are grand in their simplicity, but they are subdivided into many parts by multifarious details. The doming is evidently based upon the axiom that any section of a sphere is a circle, and therefore that a perpendicular section of a dome will be a true arch, provided that the voussoirs radiate from the arch's centre, and that the outside of the arch is sufficiently buttressed to prevent the pressure of the dome from pushing the arch outwards.

The nave, bema, and apse combined have a clear, open length of about 256 ft., and about 110 ft. across between the lateral arcades. To this about 60 ft. on either hand must be added for the width of the side aisles. The narthex is 30 ft. wide and the exo-narthex 19 ft.; unfortunately the atrium has totally disappeared. All the arches and domes that sweep over the body of the church are turned at a point about 2 ft. 6 in. above the cornice, which is 72 ft. from the floor. The centre round which the whole design radiates was the great dome, 154 ft. in diameter measuring diagonally. It was cut down to a square by four great arches 103 ft. in diameter. The great arches to the north and south have only a small portion of their soffits showing, the rest being within the walling which surrounds the transeptal arches. The transeptal arches are about 72 ft. in diameter. The great arches to the east and west have a soffit of 10 ft., and span the width of the church resting upon projecting piers. These later great arches are buttressed by semi-domes of the same radius, which come flush against them.

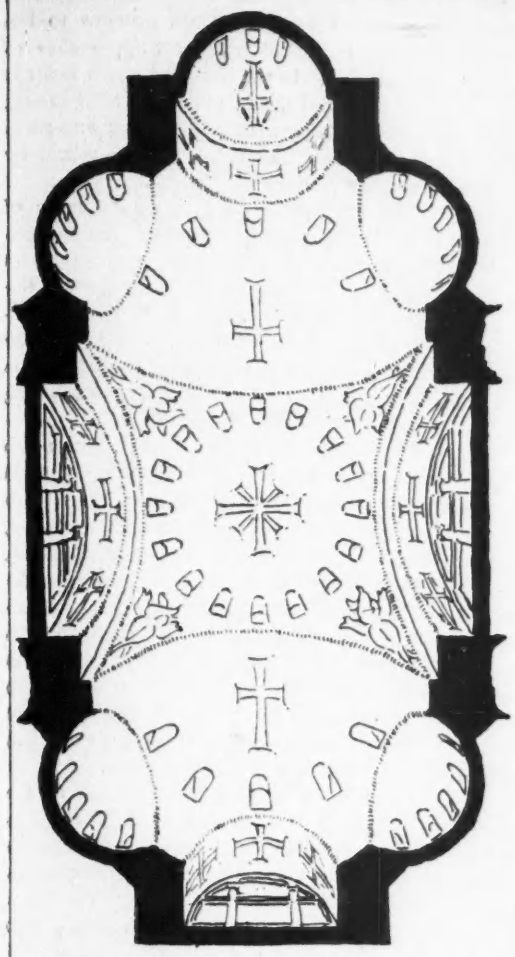
On the north and south of these semi-domes spring subsidiary apses (exedræ) 42 ft. in diameter, thus making the plan of the nave the shape of two squares. East and west of the semi-domes and cutting into them are barrel vaults about 48 ft. wide and about 20 ft. deep, the eastern one terminating in the apse 40 ft. wide and the western in a large window. Thus the whole weight of the great dome and the two semi-domes is concentrated upon eight piers. Two of these piers are at either end of the church supporting the haunches of the semi-domes, whilst the four main supports are placed against the great eastern and western arches, being 65 ft. long by 25 ft. wide and 72 ft. apart. They come flush with the external wall of the church. They carry staircases within, now filled up and disused except near the top, and are also pierced by the aisles and the galleries.

There are no semi-domes on the northern and southern sides to buttress the great dome, but the requisite support is furnished by the four piers mentioned above. Broad arches of about 16 ft. soffit connect the piers, thus making shallow transepts which probably had large windows on their outer faces, similar to the window at the western end of the church. The mullion pillars were placed directly over the secondary order of columns which help to carry the aisle and gallery vaulting behind the lateral arcades, so that these transepts made the design of the building a cross.

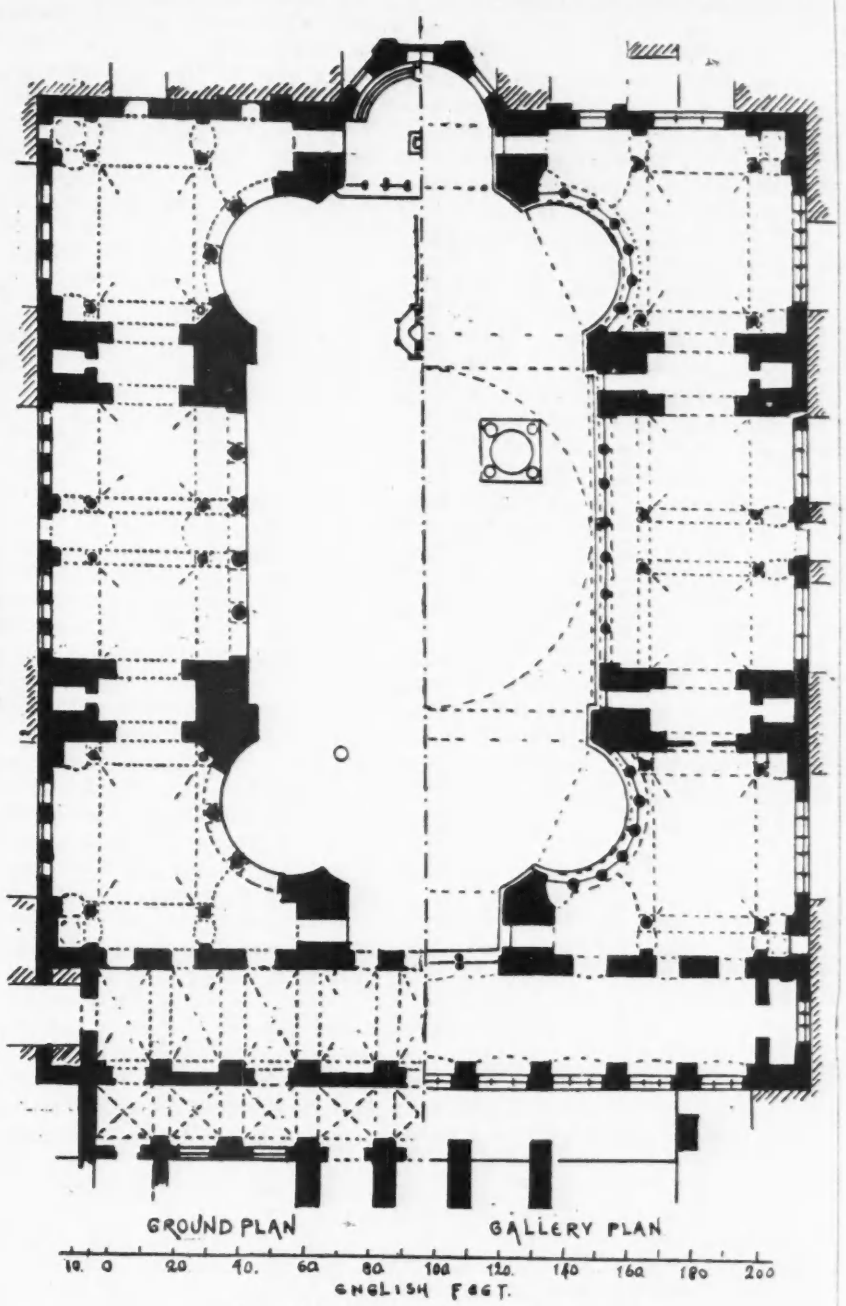
The domes being built in concentric rings, and not in ribs, had few windows. Originally the great dome had probably sixteen windows, each semi-dome and exedra has five, while the apse may have had three. These extensive curved surfaces were covered with golden mosaic, adorned with numerous coloured large crosses. Broad bands of ornament ran under the arches and their curved arrises, six-armed crosses being often enclosed as medallions in the decoration.

The elevation of the walls of the central area is divided into two heights, the proportion being about five to seven. Each height is crowned by a cornice, the lower one being about 42 ft. from the pavement, and slightly below the gallery level. The upper cornice is 30 ft. higher. The lower cornice does not quite encircle the central area, as it stops against the reducing wall of the bema apse, but the upper does so without a single break. The lower division has centrally on either side an arcade of four great monolith verde-antico columns, 25 ft. 6 in. high, closely spaced together, and only raised a few inches from the floor. These have been very roughly hewn, and are not uniform in thickness. On some of them even the small projections left for porterage have not been tooled off. These columns, like all the other verde-antico in the church, were quarried in Thessaly, and were presented to Justinian by the Prefect Constantine of Ephesus.

The four exedræ at the corners of the nave are of three bays each, and are adorned each with two monolith columns of imperial purple porphyry, well finished, though now much split, and bound with bronze rings. They are 21 ft. 9 in. high, and stand upon Marmora marble pedestals, the base and the



SKETCH RESTORATION ABOVE MAIN CORNICE LEVEL OF ORIGIONAL DESIGN



Plan of St. Sophia, Constantinople.

pedestal of the column being all in one block. These beautiful columns do not seem to have come directly from Egypt. It appears that they belonged originally to the Temple of the Sun at Baalbec or Palmyra; that they were carried thence by Aurelian to adorn his temple in Rome, and having come ultimately into the possession of a patrician lady, Marcia, were presented by her to Justinian, "for the salvation of her soul." It would be interesting to know whether Anthemius had these great monolith columns in view when he originally prepared his design.

Uniting the columns to their capitals and bases are amulets of brass or bronze, the lower ones being polished. The capitals are of Marmora marble, bowl-shaped Ionic, delicately wrought with long-stemmed acanthus, undercut in parts and bossed out towards the front and rear. The bosses bear monograms of the Emperor Justinian and his Empress Theodora. The soffits, spandrels, and surfaces above the arcades are plated with Marmora marble slabs delicately carved in reticulated and circling foliage. The different parts of the decoration are unfortunately not always skilfully fitted, especially those found on the exedræ; a fact which clearly shows that the carving was executed on the bench. Coloured marble medallions are inserted within the spandrels.

The upper arcading is in beautiful harmony with the lower. The lateral arcades have six columns which stand over the four verde-antico pillars already noticed. The exedræ have also arcades of six columns, but stand over two; an arrangement which excited the admiration of Paul the Silentiary when he wrote: "One wonders at the power of him who bravely set six columns over two and has not trembled to fix their bases in empty air." All these columns are of verde-antico with closures of carved Marmora between each, forming a breast-work to the women's galleries. The capitals are in character with the lower order; the soffits of the arches are of coloured mosaic. The spandrels and the wall over them, with the frieze to the cornice, is pietra-dura inlay of white marble and green porphyry enriched by coloured medallions. The piers and wall surfaces are plated with various marbles; each panel or horizontal band is bound and kept in place by a narrow hit-and-miss notched and splayed fillet of Marmora marble.

Between the verde-antico dados and the first cornice the revetment of marble is divided into three sections bounded in four horizontal bands of cream-coloured Oriental alabaster. The surfaces of the central section are, as a rule, arranged as follows:—A perpendicular panel of rosso-antico is supported on either hand by a panel of light bluish mottled marble, the three panels being enriched by a bordering of paternoster carving. In the sections above and below are handsomely veneered rich greenish cipollino marble slabs opened diptych-wise. The upper system of panelling is of two heights, but otherwise follows the system below.

The western wall contains three portals, the central (Porta Basilica) being about 22 ft. high. Between and above these doors are inlaid marble devices, some being cut down to the necessary shape of the panelling. The upper height is the central portion of the great western gallery over the narthex. It is composed of three arches on clumsy coupled columns, above which are roundels of alabaster fitted in square panels, forming a band below the frieze.

Having described the central portion of the church, we may now turn our attention to the lateral aisles and galleries. These are divided into three great compartments both north and south by the four great buttresses which contained the original sloping ways of access. The vaulting is carried almost independently of the arcades and entirely so of the external walls by a very clever management of minor columns. In the aisles eight columns are square monoliths of Marmora marble, the other sixteen being of verde-

antico. Above these, in the galleries, stand twenty-four columns of Marmora marble. The central compartments have two domes each, the eastward and westward one each, the branches of these springing from the columns. The intervening spaces between the doming and walling are filled by barrel-vaults; but the meeting of these against the curving blocks of the exedræ is anything but beautiful.

The vaulting and arches of both aisles and galleries were covered with mosaic, little of which, however, remains.

The walls of the aisles are lined with a skirting enriched in the eastern compartments by a tooled-in fret. Above it is a Marmora marble dado, and over that comes band of verde-antico. The wall surface above this is in two heights, the panels being of alternate verde-antico and brecciated white and rosy red synadan. The upper and lower panels are separated by a band of rosy cipollino variegated with white veins probably from Laconia. The frieze is of opus-sectile and the cornice of Marmora marble, having a roll of undercut branching foliage. The walls of the galleries are lined with beautifully veined soft bluish-white Marmora marble, opened out in such a way as to make delightful combinations of the variegated markings. The dado and frieze are of rosy cipollino, and just below the vaulting is a band of stamped plaster.

The whole floor, as far as can be seen, is of Marmora marble slabs, running from 12 ft. to 15 ft. in length, and of various widths, generally 3 ft. 6 in. to 4 ft. A square of opus Alexandrinum in the nave floor, eastward, in front of the great southern colonnade, marks the spot in front of the Byzantine Emperor's throne. Also in the nave floor is the well head to the cisterns below the church, which cannot be explored, as the water is generally only 4 ft. below the pavement. The depth is about 39 ft.

It would be of very great interest to know if this substructure is anterior to the present church, and if the great piers are kept well away from it, as that would throw light upon the plan of the church.

This glorious church remained what the architect designed it for only twenty-eight and a half years. In May, 558, an earthquake shook down most of the great dome, the apse, and other high parts, destroying, in consequence, "the Holy Table, the ciborium, and the ambo." This was most probably due, partly to the original centring being removed too quickly, and partly also to the pressure of so flat a dome being greater than its abutments could withstand.

When the church was restored, the beauty and unity of the original design was greatly marred. The great buttresses were weighted by carrying them higher; the walling above the four great arches was raised until the square table was formed, which we now see on the exterior, and upon which the restored dome seems to stand. The window walls were removed from the outer edge of the transepts to the inner face and thus placed over the lateral arcades to bear the weight of the new dome. The old shallow transepts now appear on the outside of the church as the huge arches between the great external buttresses. The new window walls were originally pierced by eight windows, for which the Turks have substituted twelve.

The original pendentives seem to have been left, but a circular gallery was made, uniting them above the great arches, upon which a new dome was built of about 107 ft. in diameter and about 48 ft. to the crown from the gallery. In construction this dome is very different from its predecessor, for instead of the smooth surface of a dome built in concentric rings, we have one of forty ribs with sunk panels, an arrangement quite out of harmony with the rest of the doming. Each panel stands on the arch head of a window. So much light is thus admitted as to give the appearance of the dome being suspended from above.

The only mention of decorative mosaic is that of a cross "as protector of the city surrounded with stars," which was placed in the centre of the dome.

Justinian seems to have restored and elaborated the original fittings, which were of a most costly character. The patriarchal chair was against the eastern wall of the apse, and the clergy stalls swept round the curve on each hand in diminishing crescents. In front stood the Holy Table, of champlevé enamel, elaborately jewelled, surmounted by a silver-gilt ciborium. Before this stood the iconostasis, which crossed the church under the entrance to the bema vault. This was also of applied silver work, and of good width, having a set of six coupled columns surmounted by a broad beam wide enough for a man to walk along to light a beautiful festoon of lamps. The sacred monogram was placed over the central doorway and holy pictures in the panels. At the distance of a few feet to the west of this central doorway was a passage bounded by a breastwork on either hand of verde-antico panels set in a frame of red marble. This passage led to the ambo — a beautiful structure reared on the axis of the church and under the great eastern arch. It stood upon eight pillars, the floor being of one block and hollowed out on the under side. The ascent was by flights of steps on the east and the west, protected by carved marble panelling.

Enclosing the ambo and steps on the north and south were two semi-circular breast walls, similar in character to the walls lining the passage, but with eight large pillars between the panels, and carrying a cornice surmounted with innumerable lamps. Within this enclosure was situated the choir.

The Emperor's throne stood to the south-west of the choir, an Opus-Alexandrinum pavement, as we have already said, still marking the front of the daïs upon which the beautiful imperial chair of inlaid ivory and mother of pearl was placed. The patriarchal throne occupied the corresponding position on the northern side. The central and easterns portion of the southern gallery, separated by a marble screen from the rest of the gallery, was reserved for the Empress and her Court ladies. The Emperor could reach his place by a special entrance into the southern aisle, while the Empress ascended to the gallery by a private stairway.

In the year 865 a turret for bells was built over the buttresses outside the exo-narthex, and a few years later Basil I., the Macedonian, restored and strengthened the great western arch, upon which he "figured the Virgin with her Child on her arms, and Peter and Paul, the chief of the Apostles, on either side." This could be done as the use of images had been restored in the earlier part of the century.

About this period several minor additions and alterations were made, amongst which were the north and south porches to the narthex, furnished with new approaches to the galleries. In the southern porch is fitted the "Beautiful Door," parts of which consist of chaste antique bronze casting and parts of poor Byzantine work, further enriched by decorative plaques rivetted on.

The earthquake of 975, in the reign of Basil II., brought down part of the western semi-dome, and with it the western barrel vault; but, fortunately for the church, the great western arch, which had been previously strengthened, did not fall. In the restoration, the curve of the semi-dome was thickened, and raised slightly, thus showing the width of the great western arch.

There can be little doubt that much mosaic figure-work was inserted into the old golden ground during the ninth and tenth centuries, amongst which might be noted, as a substitute for the cross within the dome, a mosaic of "Christ embracing the whole world in his regard, surrounded by a rainbow;" below Him, in the panels, were tiers of angels. Probably on the bema apse was depicted the Virgin, with arms uplifted in prayer, similar to that in the new church of the palace built by Basil I., and as seen at Torcello and Murano, near Venice.

In 1204 the church was pillaged by the Crusaders, and afterwards used by them as a church of the Western rite until they were expelled, in 1261, by Michael Palæologus. Under that Emperor the fittings of the bema, ambon, iconostasis, sacred vessels, and vestments were restored.

The last great injury sustained by the church was again caused by an earthquake in 1346, only 109 years before the Byzantine Empire came to an end. The great eastern arch came crashing down, carrying away a portion of the great dome with twelve of its windows. More than half of the north-eastern pendentive also fell, and probably all the vaulting to the east; the apse likewise was severely damaged.

The Empress Irene, wife of Andronicus Palæologus, appointed one Phareolatus prefect of the works; but little was done until the accession of Cantacuzenus in 1347. He pushed forward the work, and John Palæologos after him completed the restoration. The Emperor employed "one Astras, in many things a clever man, but especially in building, and one surnamed Peralta, one of the Latin subjects of the Emperor."

The work of this period is very evident, as seen from the exterior. It has a more finished appearance than the work of Basil II. at the western end. In the interior the restoration made at this time is seen in the twelve easternmost windows of the great dome, which have their soffits of green and white patterned mosaic, whilst the soffits of the older ones are in plain gold. The joining of the restored work is also clearly seen on the north-eastern pendentive, the sweep of the repair being slightly arched off the older work, thus making an ugly soffit to the string course of the dome gallery walk.

The architectural design and style of the incrusted marble decoration in the bema apse is very different from that of the rest of the church. I would suggest that it dates from this period, for "The Anonymous" account of the work by Justinian at this point does not correspond with what we find now. Speaking of the discussion between the Emperor and the chief builder and master mason as regards the proper number of windows used in the apse, he says:—

"There appeared an angel of the Lord, like the Emperor, with royal robes and red shoes, and said to the craftsman, 'I will that there be a triple light, and that the couch be made with three windows in the name of the Father, the Son, and the Holy Ghost.'" Now the three windows are in two stories, the lower cornice does not run round, and there are five windows in the vaulting. Furthermore, some of the marbles are certainly from a different quarry, one principal variety being black with whitish veinings not seen elsewhere in the church.

But the glory of the restoration was to be seen in the new mosaics with which the church was further adorned, but which are now mostly lost or covered up by plaster and yellow paint. Some idea of the splendours of that work may be gathered from the mosaics and frescoes found on the vaults of the narthexes and south church in the monastery of St. Saviour in the Fields, now the Kahriyeh Mosque near the gate of Adrianople. Chief amongst the figure mosaics was the Virgin and Infant Saviour, enthroned above the central window of the apse guarded by two archangels. On the south side of the bema barrel vault was represented St. John the Baptist, while on the north side stood the Virgin, with her hands uplifted in prayer, evidently removed from the apse. Below her, in imperial robes, stood the Emperor John Palæologos, holding a sceptre in his right hand and a roll in his left. On the crown of the vault Grelot saw, in the seventeenth century, a Veronica shawl, and on the great eastern arch, a medallion bust of the Virgin, with two orders of full-length figures on either hand.

Such was this most glorious of coloured churches when it became a mosque in 1453. The entire fittings seem to have been removed. Two small mosaics, most probably from the Iconostasis, the Patriarch's Throne and the so-called Pulpit of St. Chrysostom, both beautiful specimens of ivory inlay, are now seen in the patriarchal cathedral of St. George at the Phanar. These are said to have come from St. Sophia.

As the axis of the building is not in line with Mecca, the holy city of Islam, to which every devout Moslem turns when he worships, the Mirhab in the apse has been placed to the south of the centre, and consequently the prayer carpets, which cover the entire floor, are parallel with it, thus making the building appear to be set askew. Small and large tribunes have also been placed around the mosque in seemingly haphazard positions void of any architectural effect.

During the repairs of 1847 Fossati took away some heavy buttress masses, which ran from the great piers, right up to the great dome, and substituted a double cincture of iron around its base. He also, besides much other excellent work, straightened thirteen of the gallery columns, and also repaired the whole of the doming and vaulting, replastering and painting it.

At this moment restorations are being carried on upon the great dome pendentives and the whole western half of the building, besides patching up the cracks in the gallery vaults. So far as I can gather, the repairs consist in the removal of old plaster, in uniting cracks with iron clamps and cement, chiselling out the joints of the brickwork, and in replastering and painting, all too quickly, afterwards.

I could see no vestige of mosaics in the small arched panels of the great south window wall which were uncovered, but only naked brickwork. The springing of the great western arch is of squared stone, but to what height I cannot say, as only a small portion had been uncovered at its north-west base when I saw it. The great western semi-dome and the barrel vault at the western end, which were cleared of all plaster, had no mosaics.

Although the mosque will lose somewhat more of its mosaic, though none of importance, it is satisfactory to know that no relaying has been attempted, and that St. Sophia will stand erect and secure for a long time to come.

NOTES.

The Palace Hotel, Paris.

ONE of our illustrations this week is that of the new Palace Hotel in the Champs Elysées, Paris, which is fully described in its proper place. But the design, and the reputation of its architect, suggest a word beyond the mere descriptive matter. M. Chedanne, as many of our readers are aware, was one of the most brilliant of the "Prix de Rome" students of his day, and made his further great reputation by his researches at the Pantheon, and the splendid set of drawings of that monument which he carried out. It has often been said that the French system of architectural education, based so largely on the study and illustration of ancient classical monuments, is too academical, and not a preparation for the carrying out of works of modern architecture. Yet this line of education has not unfitted the architect in this case for carrying out such an essentially modern kind of building as a great hotel; and any one who studies, in the illustration which we give, the unusual and refined manner in which this elevation is modelled, especially the treatment of the bays curved out from the wall-plane, and the elegant treatment of the columned *frontons* above them, will recognise how much of real architectural art has been brought to bear on this treatment of a hotel façade. Of the smaller details of carved ornament we do not speak so much—they are in the French taste of the day, with which we do not altogether sympathise; but there can be no question as to the refinement and originality of the architectural design as a whole. On the other hand, considering that this hotel is simply a speculation of a trading company, it is surely highly creditable to the promoters, and a remarkable contrast to the manner in which such schemes are frequently carried out in England, that instead of going to a mere "business" architect to run them up a façade of commonplace details and window dressings, they have gone to one of the most brilliant of the younger students of classical architecture of the day. If there were more of this spirit among English hotel promoters and other such companies, we should have a chance for better architecture than is generally found in such large buildings in our London streets.

Electric Wiring.

THE electrical fire at Mr. Crackanthorpe's, which we commented on in a recent issue, has elicited a letter from Professor Silvanus Thompson to the *Times* on the dangers of wood casing. He urges that we should now make an endeavour "to get rid of wood casing at all costs." The consumer, however, whose electric wires are laid in wood casing need not be alarmed. Although it is a cheap method of wiring, there is practically no fire risk attached to it. There are several other systems superior to wood casing, but this is no reason for getting rid of it altogether. The President of the Institution of Electrical Engineers holds very strong opinions on many points, so we were not surprised to read that six years ago he "would not allow a single inch of wood casing" in his own house; but to outsiders his letter is needlessly alarming. There are of course, many advantages in using lead armoured cable, as Dr. Thompson does, but there are also disadvantages. A nail driven through it will render it useless, and taking out a lead-covered cable buried in plaster is not a cleanly operation. A better system is to use conduits like steel pipes to carry the wires. This has also sometimes serious drawbacks. We have heard of a mansion fitted up in this way where the lighting gave every satisfaction for two years and then went out. The advantage of conduits is that the wires can be pulled out for inspection. In attempting to do it in this case the wires only came away with the greatest difficulty, and left their insulation coverings behind. This was due to the steel pipes being full of rust. The pipes were supposed to have been watertight. As this is obiously important, they should have been tested for this quality. The prospectuses of new systems of wiring frequently exaggerate the dangers of wood casing, but fire insurance officials can give statistics, which prove the fallacy of their statements. For example, Mr. Musgrave Heaphy, the electrical adviser to the Phœnix Fire Office, writes in Monday's *Times* that "one of the greatest English fire-offices" insuring many thousands of electrical installations has never had to pay a shilling for loss with regard to any installation put up according to its rules. As the insurances go back to 1882, Mr. Heaphy naturally regards this result with complacency.

The Brighton Railway Collision.

THE verdict on the Brighton railway collision, which has the practical result of exonerating every one from blame, will not be satisfactory to the travelling public. The evidence seems to show that the accident was primarily due to the driver neglecting the rule to proceed cautiously in a fog, and a verdict that it was not "gross negligence" is not likely to satisfy the feelings of the relatives of persons who were killed, or to re-assure those who have to travel by that line. "Gross negligence" appears to be a technical finding, necessary for imputing legal responsibility to any one; there are of course different degrees of it, and this was not one of the worst cases; the driver's general character would have told in his favour; but the public require protection, and we think he should *pro formâ* have been sent for trial, though very likely under the circumstances the sentence would have been a light one, or he might have been acquitted altogether. The naïve reply of the Burgess Hill station-master, when asked, "Should you not have sent to find fogmen?" "I was shorthanded, and it was Christmas time," is unfortunately only

too characteristic. Christmas is just the period when trains are more crowded and often more frequent than at other times; *ergo*, it is just the time when extra precautions should be taken; but the reasoning of some railway officials seems to be in the opposite direction.

Iron and Steel in America.

IN the Journal of the Franklin Institute for December we notice some interesting personal reminiscences by Mr. John Fritz, dealing with the development of iron and steel manufacture in the United States during the past seventy-five years. Within this remarkable period phenomenal progress has taken place in every branch of manufacture in all parts of the civilised world, and it may safely be said that in no other department of industry have greater advances been made than those exhibited by the iron and steel trades. The United States have undoubtedly profited to an enormous extent by the vastly increased use which has been made of these metals, so much so that there are not wanting prophets who cry aloud that the day of England's supremacy is near its close. With jeremiads such as these we do not agree, but it must be admitted that in every branch of manufacture into which iron and steel enter, the most determined competition is likely to emanate from the opposite side of the Atlantic. The retrospect to which we refer commences with a description of the primitive furnaces and mills established about the year 1810 in Pennsylvania, and it sounds strange in the present day to hear that the first rolling-mill driven by an old-time undershot water-wheel was often so short of power that "frequently all the workmen would run and get on the buckets, and tread with them, in order to prevent a stall which would have caused fire-cracks in the rolls, and, sooner or later, a broken roll." Very little progress in iron manufacture was made until 1836, and no marked improvements were introduced before 1845, when the manufacture of rails was commenced. About this time trouble began, not only with the puddlers, but also with the appliances used in puddling. The old-fashioned Welsh hammer was in course of time superseded by the "crocodile" squeezer, and this in turn by the "Burden" squeezer, which to this day is almost as perfect a machine for the removal of slag from newly-made wrought ron as any that has ever been devised. Notwithstanding its good qualities, the men resented the introduction of this appliance down to the year 1856. About the year 1848 the kind of puddling known as "pig-boiling" came into general use, and puddling soon became the all-important branch of the iron industry, continuing in the lead until it was overtaken by the invention of Sir Henry Bessemer. After 1844, the forge carpenter and millwright, who had been responsible for the construction and upkeep of the mill-gearing, was superseded by the machinist, and he in turn has given place to the mechanical engineer. In 1857 a memorable advance was made in the manufacture of rolled iron rails by the introduction of an improved mill, designed by Mr. Fritz. At the outset his suggestion met with a rebuff, and he was told: "It was a visionary scheme, and had it been practical, it would have been done long ago." Nevertheless, the new rolling mill became an accomplished fact, as also did the consequent supremacy of the Cambria Iron Company, in whose works the invention was adopted. Whilst taking proper credit for the intelligence and perseverance displayed by Americans, the author of the reminiscences in question does not forget "that it was the inventions of Cort, of Mushet, of Bessemer, of Siemens, and of Thomas that enabled us to accomplish such important results." Nor does he omit to acknowledge that much of the success attained in the United States has been due to the information gained from "the invaluable papers" read at the Iron and Steel Institute.

Willesden Surveyor's Report.

MR. CLAUDE ROBSON'S Annual Report as Engineer to the Willesden District Council is, as usual, a model of fulness and precision. We can only notice a few of the points in it. In regard to road questions, the Surveyor objects to the Council being willing to sanction patent concrete foot pavements where there is large traffic, his experience being that York paving is more durable. Some difficulty has been experienced with the railway bridge approaches, which the railways are liable to maintain, but which have been actually maintained till recently by the Council, the companies paying so much a year. A difference in regard to this payment has for the present ended in the companies maintaining the roads themselves, with much less efficiency (as might have been expected, since their interests are not concerned in it). The necessity is pointed out of enlarging many of the surface water drains in the district, which are inadequate, owing to the construction of new roads and consequent increase of the rainfall led into them. Trees planted in the roads (all planes) have thrived so much that in some roads the removal of every alternate tree has been necessary owing to the obstruction both to the lighting and the passage; it is useful to bear in mind that trees planted too closely in such a position may become a nuisance when fully grown. Several important works of drainage are in contemplation which it is desirable should be taken in hand this year, notably the relaying of sewers in Carlton Vale, Rucklidge-avenue, and Stracey-road, the provision of proper drainage for Donnington and Uffington roads, and the diversion of the drainage of Kensal Green, connecting with the sewers of the London County Council crossing Wormwood Scrubbs. In regard to drainage generally, it is stated that the automatic flushing tanks at the heads of various sewers have been discontinued, as while consuming a large quantity of water, "they were found to be valueless in flushing any appreciable length of sewer," the flushing by van being as efficacious and less costly. We do not understand this; it is surely only a question of the size of the flushing tank and the volume of water discharged by it. Upcast shafts for ventilation of the sewers, of which there are 1,600 to sixty-five miles of sewer, have answered well and given rise to few complaints. There have been serious cases of flooding in Kilburn, Brondesbury, and Harlesden, by reason of the inadequate capacity of the Metropolitan sewers. On this head the Surveyor writes:—

"The necessity for the work must be well known to the Central London Authority, as memorial after memorial has been presented to the them, not only by this Council and its predessors, but also by the Metropolitan Local Authorities who now suffer from the neglect, to provide the intercepting sewer to relieve the shallow sewers of Paddington and its neighbourhood. I would again recommend that urgent representations be made to the London County Council to push forward the work of constructing the relief sewers, as with the increase of building operations in Hampstead the trouble is magnified each year, and bad as the matter now is it will become even more serious in the future, unless more adequate capacity is made for the discharge of the Ranelagh sewer and its tributaries."

Newgate Prison and the Sessions House.

THE Treasury have arranged to transfer in September next the site of one wing of the prison to the Corporation, for purposes of rebuilding the Old Bailey Sessions House, for a sum of 40,000*l.*, to be payable in instalments extending over three years, and to place that amount to the credit of the prisons' vote on behalf of the enlargement of Brixton Prison, instead of the gaol at Newgate. The Corporation have retained the services of Professor Aitchison in respect of the designs for the new structure at an honorarium of 400 guineas. George Dance the elder prepared plans for rebuilding the old Newgate and Giltspur-street prisons with a new city gate, across Newgate-street, between the two; his designs are engraved on three sheets, and appeared in the *Universal Magazine*, 1764. The latter prison, erected in 1787-91 after the designs and plans of George Dance the younger, was pulled down in 1855, and its site was sold to the Governors of Christ Hospital, who used it for the Bluecoat boys' outdoor gymnasium. George Dance, R.A., succeeded his father as City Surveyor in February, 1768, having, as was then customary, bought the office for 200*l.* At the building, begun in 1770, of the present Newgate Prison, it was found necessary to sink the principal foundations of the brick vaulting to a depth of 40 ft., by reason of the existence of the town ditch along the old London wall. Dance threw into the yielding soil cart-loads of whole and broken bricks mixed, in a ratio of 1 in 4, with cart-loads of mortar—a rough concrete that made an excellent foundation. Portions of the City wall yet remain in the prison—on the east side of the passage (the convicted felons' burial-ground) leading to the Criminal Court and the Sessions House outer yard (commonly, yet erroneously, identified with the old Press yard), and in the garden belonging to the residences, designed by Ewan Christian, at Amen-corner, of the canons of St. Paul's. The Sessions House, as rebuilt in 1773-4 by George Dance the younger, was enlarged by William Mountague, City Architect, who took in the site, on the south, of Surgeons Hall, demolished in 1809, which had a frontage of 80 ft. to Old Bailey, and was built in 1745-6 from the designs of the elder Dance (*obiit* 1768). It was again enlarged eastwards by J. B. Bunning, Architect to the Corporation, and further internal improvements were carried out fourteen years ago at a cost of 2,100*l.* In our issue of August 8, 1857, will be found an account of the discovery of the old London wall, in the course of constructing the block of separate cells, by Bunning, within the high screening wall which encloses the north wing, the men's side (and formerly the debtors' side) of the prison. See also the plans (one being of Newgate) and drawings in the *Builder*, May 12 and June 9, 1855—"The Wall of Old London."

Landscapes at the Dudley Gallery.

THE exhibition of a small collection of landscapes by a group of painters—Messrs. R. W. Allan, Aumonier, J. S. Hill, Peppercorn, Leslie Thomson, and E. A. Waterlow, has become an interesting annual event, though we do not know that the exhibitors made quite a suitable choice of a motto in the well-known lines from Browning's "Fra Filippo Lippi"—

> "We are made so that we love
> First, when we see them painted, things we have passed
> Perhaps a hundred times nor cared to see;"

for that was essentially a protest in defence of realistic art—the mere presentment of a thing in painting creating a new interest in it; whereas an exhibition like this, where several painters, some of them with a very marked individuality of style, present us each with his own ideal of landscape art, rather emphasises the fact that a great deal of the interest of the art of painting consists not in the mere presentment of facts, but in the painter's way of seeing them. Taking the first two groups of landscapes here, those by Mr. Peppercorn and Mr. Waterlow, it might seem that the two painters belonged to different planets, so differently are the scenes of earth viewed or translated by them. Mr. Peppercorn sees the melancholy aspects of nature, and perhaps imparts to them an added melancholy (artistic only) of his own. In the "Edge of the Common" we have his view of the sentiment inspired by a bare waste ground and one big ragged tree; the picture is a poem; another painter might make quite a different poem of it. "Dartmoor" is a fine scene of the gloomy type, with a wild sky, perhaps somewhat too loaded in execution; the "Moorland Landscape" is in a gentler key. Mr. Waterlow, on the other hand, lives amid sunlight and bright flying clouds; his works have less of sentiment and more of every-day reality. The finest of his landscapes is one of the smaller ones, "A Breezy Day," more of a real picture than the others. Mr. R. W. Allan sees broad and bright effects in his coast scenes with blue water and fishing craft, and has also achieved a wild inland effect in "Stormy Winds of Autumn." Mr. Aumonier's village scene, "Church Cottages," derives its poetry from the effect of the church tower warm-tinted in the sunlight; "Spring," his largest work, is interesting, but perhaps does not glitter quite enough for spring. "On the South Downs" he shows us the broad spaces of sunlight lying on the undulating surface of the land. Mr. Hill's best work is unquestionably "A Wood by the Sea," the distant sea especially is admirably treated; he adds to his collection several flower pieces which are fine in colour but somewhat too heavy in treatment, though he may claim M. Fantin-Latour's example to keep him in countenance. In Mr. Leslie Thomson's "Ophelia" there is a fine effect of dark wooded foreground and stream with a wild gleam of sky between the trees; the sentiment of the scene is rather spoiled by the figure of Ophelia, which is prominent and somewhat commonplace. "A Norfolk Wherry," the largest work, seems rather a cooked effect of colour; "Beccles," a scene on the Broads, has a more free and open-air feeling. This is a most pleasant exhibition to go to, as one has only to consider a small number of paintings by picked men, all of them worth attention, instead of having one's attention taken off by a crowd of mediocrities.

NOMENCLATURE OF ENGLISH GOTHIC STYLES.

THE main object of the following remarks is rather historical than critical; an endeavour to give, in a comprehensive manner, some account of the origin of the terms used in classifying the styles of English architecture.

By English architecture is to be understood the Anglo-Norman and the Anglo-Gothic styles; that is, the architecture which was introduced into England by the Norman builders, and which, upon the adoption of the Pointed form of arch, developed into several successive styles of great beauty, reached a culminating point under the first three Edwards, and gradually declined under the influence of the Renaissance. Although not English in its origin, this architecture soon acquired a distinct character of its own, continually diverging in its progress from the Gothic of France and the other nations whose mediæval architecture claims common ancestry with that of England. It may, therefore, claim a right to the title English.

At first sight it seems strange that at least as early as the middle of the seventeenth century this English or Gothic architecture should not have been critically analysed, with divisions and sub-divisions set out in logical order after the fashion of the age. Classic architecture, we know, had long been under a tyranny of rule and method, but Gothic architecture was in no good repute; it was regarded as a monstrous creation of monkish superstition, subject to no rules, founded on no principles, unworthy to be treated of as a science. Wren's "Parentalia" gives some idea of the contempt with which it was generally regarded in the age of the Renaissance; Evelyn in his Diary follows suit. Early writers on architectural antiquities (such as Somner in his "History of Canterbury") speak of the "style used in the reign of" this or that king, and it was not until the beginning of the present century that any serious attempt at classification and nomenclature was made.

The English Society of Antiquaries appears to be credited in some quarters with having paved the way for a definite system. On looking into the matter, however, one finds that the Society has obtained more credit than it deserves. Certainly, in the "Account of the Cathedral Church of Durham," published by the Society in 1801, it is proposed to substitute the term "English" for "Gothic," but there is no classification in either that work or in the works on Gloucester and St. Albans, published later by the same Society. There is a suggestion of a division into three periods—the earlier, middle, and later; but this division is not worked out, and, though the term Early English is used, "Early" is lettered with a small "e," showing that it was not at that time intended to use the phrase as a fixed descriptive term. Further, there is in the *Gentleman's Magazine*, 1810, a protest to the effect that the *Society of Antiquaries* did not adopt the change from Gothic to English, but only the *individual member* of the Society who was responsible for the work on Durham Cathedral. In proof of this we are referred to the note by an "ingenious baronet" in that work. Search has failed to reveal the ingenious baronet's note, and what notes there are seem to point to the contrary conclusion.

The only novelty, then (subject to the ingenious baronet's note, when found), introduced by the Society of Antiquaries was the substitution of "English" for "Gothic." The term Gothic seems to have greatly disturbed the minds of writers of that day when the beauties of Gothic, so long hidden by the blindness of prejudice, were beginning to unfold themselves from dark corners. Appreciating the beauty they abused the term, which certainly had originated as a term of reproach. The use of generations had, however, acclimatised it, and though founded upon error it could not be abolished, and has now acquired a significance that blots out the reproach, and conjures up our purest dreams of majestic loveliness.

The Rev. T. Warton was Poet Laureate at the end of the eighteenth century, and he may claim, if we are to accept the testimony of the Rev. John Milner, the greater distinction of having made the first real attempt to classify Gothic architecture. In his letter dated February, 1800, prefixed to "Essays on Gothic Architecture," Milner writes as follows:—

"As there are different periods of fashions of Pointed architecture, it is worthy the attention of the curious antiquary to distribute these subjects into their proper classes. . . . The late Poet Laureate has divided the architecture in question into the Absolute Gothic, the Ornamental Gothic, and the Florid Gothic."

These terms appear in Warton's own essay in the same volume. Milner does not himself add anything of importance to the subject. He criticises, however, the term Gothic, which was apparently at first used for the Norman and Pointed styles indiscriminately, but afterwards applied only to the latter, and continues: "Speaking of that light species of architecture, which properly began in the reigns of our first Tudors, I call it the Pointed style; when describing this in conjunction with the heavy Circular order which preceded it . . . I term both together the architecture of the Middle Ages;" and he concludes by referring to the subject as one which, treated as a science, may still be considered as almost new.

It has been objected, and with reason, that Milner committed an absurd error in his description of the Tudor style, for "a light species of architecture" was exactly what it was not. Milner seems, however, to do him justice (though such justice is a doubtful tribute to his abilities), to have jumbled together all the styles succeeding the Norman in an undistinguishable heap, and to be referring rather to the Early English than to the Tudor in the above quotation: "for observe," he says, "the heavy Circular order which preceded it," referring undoubtedly to the Norman style.

In the above division we have the germs of the system adopted by Rickman, but there were other writers in the gap to whom we may briefly refer.

Lyson's "Magna Britannia" (published 1806) does not adopt the change from "Gothic" to "English," nor is any attempt to name the styles made in that work, as the following extracts will show:—

"Remains of the earliest style of Gothic architecture are to be seen in the nave of Elstow Church."

"Of the succeeding style of Gothic architecture, which prevailed during the fourteenth century, few examples exist in this country."

"Several Bedfordshire churches are in the latter style of Gothic architecture, which prevailed during the fifteenth, and at the beginning of the sixteenth century."

It is to be noted that, though the nomenclature is not adopted, the divisions into styles according to dated examples practically correspond to the Early English, Decorated, and Perpendicular of Rickman.

In 1807 Britton published his "Architectural Antiquities," and we are able to mark a decided advance in the way of classification. It is not strange that he should confess to the necessity of "characterising" the various styles of architectural antiquities peculiar to Great Britain, "the usual commonplace Saxon and Gothic being vague and nugatory." Therefore he prefaces his remarks on the church at Malmesbury with what he describes as "A Sketch of a Nomenclature of Ancient Architecture." His five periods or styles are Anglo-Saxon, Anglo-Norman, English, Decorated English, Highly Decorated or Florid English. Elsewhere he uses "Pointed" as an alternative to "English."

It would have been better to have qualified the term "English," as otherwise Decorated English and Highly Decorated English appear to be sub-divisions of English, instead of co-ordinate divisions. Milner (see his "Account of the Cathedral Church of Ely," 1808) evidently noticed this, for although he adopts, professedly following Britton, a similar division, he uses the terms "Early English" and "Ornamental English" for the third and fourth styles. He dates his periods, however, with less attempt at accuracy than Britton.

These treatises were all monographs on particular buildings, or a particular series of buildings, though some of the authors found it advisable to give a short epitome of church architecture by way of introduction. It was Rickman who gathered together the threads of suggestion, and wove them into a coherent fabric.

In 1817 was published his well-known work, bearing the title of "An attempt to Discriminate the Styles of Architecture in England from the Conquest to the Reformation." This work for

the first time deals with the subject generally: the buildings mentioned are introduced as examples, and are not, as in the other works referred to, the main objects of the author's inquiry. Dismissing from his catalogue the Saxon Style, probably owing to the confusion which was at that time attached to the term, he fixed upon four as the number of styles, naming them Norman, Early English, Decorated English, Perpendicular English. The only original feature in this divison is the substitution of the term, Perpendicular English, for the style named by other writers Highly Ornamented English and Florid Gothic. This was a change for the better, for surely the division of English architecture, from the fourteenth century till its decline, into two degrees of ornamented or decorated work was (to quote Britton's phrase) vague and nugatory.

It is unfortunate that for the sake of convenience the word "English" has dropped out of the second and third terms of this division in common usuage, as thus the main idea of a division of "English" architecture into three subordinate heads is apt to be lost. Unless the terms are considered from this point of view the basis of division appears to be unsound, and, partly for this reason, Rickman's scheme, though generally adopted by English writers on mediæval architecture, has been from time to time the subject of some controversy.

Towards the middle of the present century the Ecclesiological Society of England discussed the subject in their *Journal*, and decided to apply to the so-called Gothic architecture the term Pointed alone, and to divide this into three styles, according to date—First Pointed, Second or Middle Pointed, and Third Pointed.

Pointed, it must be owned, is more scientific than Gothic or English; but, on the whole, the three terms (which, indeed, have the approval of such authorities as Scott and Street) convey less idea of form than those of Rickman, and, on that account, it may be hazarded, are not likely to become popular. As a matter of fact, Pointed is not accurate as an absolutely distinctive feature of Gothic architecture.

At about the same period alternative schemes were proposed by several other writers of note. Paley divides the English architecture, from 1170 until 1546, into seven classes, beginning with the Transition from Norman to Pointed, and ending with Florid, Third Pointed, or Tudor. Between these he places First Pointed and Second Pointed (each sub-divided into Early and Late), and the early style of Third Pointed. As a matter of nomenclature, this is not satisfactory, but the system does not differ essentially from that of the Ecclesiological Society. The term Transition or Transitional, however, it may be observed, is now in common use as applied to the period of change from the round to the pointed arch.

Petit and Willis seem to have included the whole of Gothic under two heads, Early Complete—Late Complete. The purpose of Ruskin was rather to criticise than to classify, but so far as he refers to the English styles by name ("Stones of Venice," 1851) he seems to follow Rickman.

Freeman and Sharpe, however, proposed systems nearly identical, which were novel in arrangement and in terms. The former, in his "History of Architecture" (1849), expresses his disapproval of the "Nomenclature of the Ecclesiologists," and at the same time severely criticises "the frivolous objections that have been taken to it in certain quarters." Assuring us that his own objections are of a different nature, he suggests five divisions of Gothic architecture, viz., Lancet, Geometrical, Transitional, Flowing or Curvilinear, Perpendicular.

It is evident that his Lancet style corresponds to Rickman's Early English, and that he subdivides Rickman's Decorated into Geometrical, Transitional, and Curvilinear, considering that these varieties of that period, brief though the time was during which it predominated, were sufficiently distinct to be considered as three styles.

Sharpe, whose work, "Seven Periods, &c.," appeared in 1851, takes as his groundwork a compartment of a large church of each of the periods into which he divides his subject, truly observing that these compartments represent the main idea of the buildings. But it appears later on that he is thinking of windows and window tracery as forming the basis of his nomenclature. In his preface he speaks with approval of Rickman's basis, of which the last two titles were professedly derived from the forms of windows, but differs from him in that he fixes upon the number of periods (including both the Saxon and Norman) as seven. In a paper in the *Archæological Journal* (1852, Vol. IX., p. 170) he contends, however, that the main division into four of Rickman should be undisturbed, though sub-divisions may conveniently be made, and a different nomenclature adopted. This is not quite consistent with the title of the work now under consideration.

The points in which he really differs from Rickman—apart from some slight differences as to the dates at which a style began and ended—are, firstly, that he fills in a gap between Rickman's Norman and Early English with a style (or, in his own words, a "Period") which he calls Transitional; secondly, that he makes two periods of the Decorated style on the same basis as the sub-divisions of Freeman, but omitting the Transitional style between those two; and, thirdly, that he gives to the name of the latest period the Rectilinear—a term which from its unfamiliarity, strikes rather harshly at first, but which is really more accurate than Perpendicular.

Transitional is here applied to the same period of change for which it was adopted by Paley. Freeman, we see, uses the term for a totally different period. To link it with any particular period of transition is not *primâ-facie* desirable, but use has accustomed us to its connexion with the change from Norman to Early English, and its claim to be considered as a "style" in this connexion has some foundation. The same can hardly be said of Freeman's Transitional period.

We may here conveniently place some of the more important of these systems in a comparative table, showing the progress in terminology.

Warton (1790?).	Rickman (1817)	Freeman (1849).	Sharpe (1851).
Saxon	Norman	Norman	Saxon. Norman. Transitional.
Absolute Gothic	Early English	Lancet	Lancet.
Ornamental Gothic	Decorated English	Geometrical Transitional Curvilinear	Geometrical. Curvilinear.
Florid Gothic	Perpendicular English	Perpendicular	Rectilinear.

It will be seen that the Saxon of Warton is placed as corresponding to the Norman of the later writers. The truth is that the term "Saxon Architecture" was, until the study of mediæval art had been seriously taken up, applied to many of the buildings afterwards styled Norman, and which were, in fact, erected after the Norman Conquest. Sir C. Wren, for instance, attributed the chapel at St. Cross, Winchester, and part of Christ Church, Oxford, to the pre-Norman period, though both these examples are undoubtedly Norman. Such was the confusion relating to the subject that Somner ("Antiquities of Canterbury") seems to have supposed that the buildings of the Saxons were constructed entirely of wood, and had perished ages ago. As we now know, stone churches were built in Saxon times, and a few interesting examples of this type of the Romanesque style still remain. The style may justly be considered as distinct from the Norman.

It may also be noticed that the term Gothic is not free from ambiguity. Strictly speaking, it would include all forms of architecture that were developed in the greater part of Europe after the fall of the Roman Empire until the Renaissance. And thus in England it would include both Saxon and Norman, two forms of Romanesque, and it was no doubt so used in its origin. But the term is now generally confined to the styles that succeeded to the pure Romanesque, whether in England or on the Continent.

Sharpe's system was criticised in the "English Archæological Journal" (1851, Vol. VIII.), and objection was taken to it on two principal grounds: that "periods" are no better than "styles," and that tracery is hardly a sufficiently important feature to form a style.

The first of these objections is surely superfluous; the main divisions of the subject are either periods or styles according to the point of view from which we study them. If we take the historical aspect we should rather call them periods, if the analytical, we should call them styles. Sharpe's exposition is both historical and analytical, and it seems, therefore, that it was open to him to speak of either periods or styles as a matter of personal preference.

Nor, it may be suggested, is the objection to tracery as a basis of classification well founded. The distinctive features of the compartments instanced by Sharpe appear decidedly to consist in the several forms of tracery. The differences in shaftings, capitals, groin ribs, mouldings, and the like, could hardly supply convenient names to the styles which they represent. Sharpe's critic himself suggests that the three usual terms of Rickman, with the addition of Early, Middle, and Late in reference to each of the terms, are sufficient—and he says this in face of the fact that Rickman derived two of these terms from forms of tracery.

However, our object was rather to trace the history of the origin of the terms than to criticise, and the opinion of the critic in question has been dealt with only because it seems probable that he is identical with the author of a widely read elementary treatise on Gothic architecture. Whatever objections have been taken to Rickman's classification, his four styles, with the addition of Transitional inserted between Norman and Early English, as suggested by Sharpe, may be termed the standard styles of architectural literature in England. If this terminology is destined to be supplanted by any other, it is hardly likely that either the scheme of Freeman or that of Sharpe will be adopted in its entirety. The abolition of the term Decorated English would seem, however, to be a step in the right direction. As we have seen, the latest development of Gothic was at one time termed the Highly Decorated or Highly Ornamental English, and since one of the styles was alone to bear the name Decorated, that style should surely have been the more decorated rather than the less decorated.

The latest development of the Perpendicular style, sometimes called the Tudor, is quite distinct enough to deserve a place of its own in the scheme. The Tudor or Four-centred arch, indeed, is anything but Perpendicular in its proportions, and one has only to look at a building of this period, with its low-pitched roof, to see that structurally the main idea is a predominance of the horizontal line.

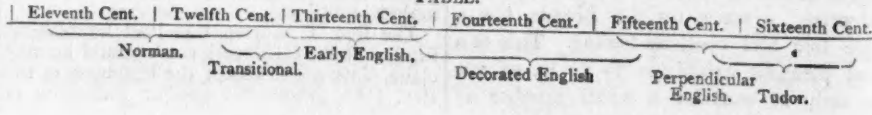
In conclusion we may ask what dates should be assigned to the styles in arranging them in historical order. The choice is large: each of the writers to whom we have referred, has dated his styles with more or less exactitude, but there is a wide difference of opinion as to what those dates should be. To give a few instances:—Early English is, according to Rickman, 1190-1307, or "perhaps from ten to fifteen years longer"; according to Scott 1190-1272; and according to Sharpe (Lancet), 1190-1245. The second date in each case refers rather to the beginning of the succeeding style than to the actual termination of the style under consideration.

It is clear that the styles were used concurrently. The change from one to another came about with curious rapidity, but was not universal. While Canterbury Cathedral was, under William of Sens, approaching the perfection of lightness and elegance, buildings of massive Norman work were growing up in all parts of England; nor did the early Perpendicular of Gloucester Cathedral at once check the building of churches in the older manner.

So, unless we have a fancy for any particular figures, it will be well to regard merely the centuries during which the respective styles predominated. The Norman carries us back to the eleventh century and the progress made during the twelfth. The Early English practically includes the whole of the thirteenth, and the Transitional is a bridge between the two styles, stretching from the middle to the end of the twelfth century. The Decorated English is fourteenth century, but it was more transitional all through than the earlier styles, and barely gained the end of its century. The fifteenth century produced the Perpendicular English, which in the sixteenth faded into the Tudor, and so mediæval Gothic came to its appointed end.

Bearing in mind these broad periods, we shall have before us a picture of the development, progress, and decline of English architecture.

TABLE.



THE TWO LOAN EXHIBITIONS.

FLEMISH art rules at the Loan Exhibitions of Old Masters this winter, both at Burlington House, where the rooms are entirely devoted to Vandyck (whose portraits during his later English period, however, may perhaps more truly be called English art), and at the New Gallery, where one room is devoted to Rubens and another to Early Flemish and Netherlandish paintings, the third containing a miscellaneous collection of English pictures ranging in date from Reynolds to Turner.

The recently adopted policy of the Royal Academy, of devoting the winter exhibitions to the illustration of one master, of course increases the value of these exhibitions for painters and students of art, who can thus have the opportunity of studying the method of a great artist as illustrated in his collective work, and of tracing the changes and development of his style; and this is no doubt a sufficient justification for the system. At the same time it must be admitted that for those who go to these winter exhibitions not so much for study as for intellectual enjoyment the collection of the works of one painter is not always as interesting as a miscellaneous collection. Unless in the case of a painter of the very highest order, one is apt to find the subjects too restricted in range and presenting too much repetition of effect. Vandyck was a great painter within a certain range, but he does not belong to the highest rank of great artists—he is remarkable rather for a grand style (which he owed partly to his sitters) and a brilliant and facile execution than for higher intellectual qualities. During his English period, when his style was most matured, he was constantly engaged in painting the same type of person in the same kind of costume; and outside of portraiture he is for the most part academical and rather commonplace. Consequently we have an exhibition of portraits in which the costumes, in most cases, are at least of as much interest as the faces, or even more; and the few subject pictures, those from Rinaldo for instance, the two Crucifixions, and the Madonnas, are academical compositions which affect one little. The exception is, perhaps, the Duke of Westminster's "Marriage of St. Catherine" (No. 41) in the Second Gallery, in which there is a charming grace and tenderness about the figure of the Virgin, and less appearance of mere school composition than in any other of the subject pictures.

One point of interest in the exhibition consists in the presence of a good many works of Vandyck's early period, those painted in Italy and on his return to Flanders, which can thus be compared with the English works of his most mature period. The difference is very striking. The feeling for the picturesque element in costume is present, as in the later works, but the faces are painted in a comparatively hard careful style which is as little as possible like our usual impression of Vandyck. One of the most typical examples is the full-length portrait of the Princess Balbi (70), arrayed in a superb embroidered mantle, and altogether an effective painting, but with little individuality of manner. There seems almost an artistic lifetime between this head and the bold and broad treatment of the powerful features of the Earl of Arundel in the half-length portrait (2) in Gallery I. The development of Vandyck's full powers and of the bold full manner of his English works seems to have taken place, as far as the evidence of the works here exhibited goes, almost simultaneously with the commencement of his English career. More than one influence may have combined to bring about this remarkable change. Vandyck, though recognised and honoured in his own country as an artist of exceptional talent, had not achieved either great fame or any wealth there. On coming to England he found himself suddenly famous, and in demand by all the greatest personages in the land—a fact in itself enough to give a new stimulus to his genius; and probably the necessity for working fast in order to get through his portrait commissions and to realise the wealth which his magnificent ideas of living demanded, combined also in prompting him to adopt a less laboured style of painting, and to aim at producing his effects in a more rapid manner.

It is to these influences that we owe, indirectly, the effective kind of *bravura* of Vandyck's English work; it is also probably to these influences that we can trace (what is undeniable) the want of serious purpose and serious feeling which characterises them. He had a succession of splendid personages in splendid costumes to paint from: costumes the mere transcript of which was almost sufficient to produce an artistic effect, and personages most of whom probably cared little for art, provided that they could have their portraits handed down to posterity in a striking and effective manner. Hence arose a want of attention to the finer characteristics of face-painting. Mr. Watts, in his chapter on "Art" in the book of "Unwritten Ideals" noticed in our last issue, has noticed Vandyck's carelessness about the eyes in his portraits—the eyes, says Mr. Watts are all alike. More than this, one may say that the female heads are nearly all alike; they are all "Henrietta Maria" heads; even the "Andromeda" (91), a large and rather crudely-coloured nude, has a head of the same type; the two ladies in the portrait group No. 53 are of just the same type. It is possible that great ladies endeavoured to imitate the *coiffure* and general appearance of the Queen (whose portrait occurs several times in the collection); but something also must be due to Vandyck's rapid improvisation. In painting men he seems to have had more eye to facial character than in his portraits of ladies, and possibly the men of the period had more character than the women.

Among the examples specially worth attention the following may be selected: "Portrait of a Lady and Child" (11) belonging to Earl Brownlow. The head of the woman is in the earlier precisé manner, that of the child is charming and painted with such freedom as almost to seem to belong to another picture. The "Miracle of St. Benedict" (23) is noticeable as being an obvious imitation of Rubens, whose influence is also to be recognised in Lord Belper's "Bacchanalian Scene" (106). The painting of "A Horse" (34) shows a palpably Vandyckian horse, not honestly studied from Nature, but built up on a conventional model; the head in particular, considering the foreshortened position of the animal, fronting the spectator, is obviously too small. The portrait of that very strong-willed woman the "Infanta Isabella Clara Eugenia" (43) is one of the few female portraits which has real character, probably because of that of the original was so strongly marked that it was impossible to evade it. The portrait of the Count of Nassau Dillenbourg (51) is an exceedingly powerful and spirited work of the Flemish period. The two finest things in the large gallery are the portrait of "Lord Wharton" (61), lent by the Emperor of Russia from the Hermitage Collection, showing all Vandyck's finest qualities at their best, especially in the matter of colour; and the portraits of Lord John and Lord Bernard Stuart (54). This portrait group of two young men, which was in one of the miscellaneous loan exhibitions some years ago, is the very type of the class of portrait Vandyck excelled in painting, and the class of persons who loved to employ him; the splendid costume and the insolent expression of the two young sprigs show the English aristocracy of Vandyck's day in all its picturesque haughtiness. One can fancy how that young man in the blue cloak would have swaggered into Vandyck's studio!

We cannot help suggesting, however, that after having now given us several collections of the works of one painter at the winter loan exhibition, and recognising, as we do, all the value of these for students, the Royal Academy should in future adopt the method of giving such exhibitions only in alternate years, with a miscellaneous exhibition on the old lines in the intermediate years. The people who go to these exhibitions purely for intellectual enjoyment have their rights, as well as the students; and except in the case of a few artists of exceptional range of powers, such as Titian and Millais, the exhibitions of the works of one man are not so interesting as the miscellaneous exhibitions.

From Vandyck at Burlington House we go to Rubens at the New Gallery, though of course the Rubens pictures, all comprised in one room-full, are not anything like so large or so typical a collection as that of the Vandycks at Burlington House. It includes the well known and very fine picture of "Daniel in the Den of Lions" (145), and also a finished sketch for the picture (105), belonging to Sir W. Farrer. Opposite the "Daniel" hangs the huge specimen of Rubens's fat nudities, "Diana and one of her nymphs reposing after the chase" (129), lent by the Queen from Hampton Court; a powerful work in a technical sense, but about as little beautiful as can be. The two finest works in the room are two of the portraits, that of the painter's brother Philip (128), and that of a lady (130) supposed to be his sister-in-law. These are works of far more refinement of style than Rubens usually displays. Lord Windsor's "Figures and Dead Game" is an effective piece of *bravura*, and the "Wild Boar Hunt" (143), lent by the Corporation of Glasgow, is a picture full of movement and life, and with a fine landscape. But the most interesting things in the room, next to the "Daniel" and the two portraits before mentioned, are some of the small studies for pictures or tapestry. Among these are "Rome Triumphant" (108); "Thetis Plunging Achilles in the Styx" (111), a partially decorative composition, flanked by terminal figures of Pluto and Proserpine; there are several others with subjects from the Life of Achilles, all flanked by symbolic terminal figures in the same manner, and all showing the foundation of fine and forcible pictures. These are said to have been painted for Charles I. as subjects for tapestry pictures.

Many of the pictures in the west room are of more interest in a historic sense than for any artistic beauty. There are, however, some fine examples of Mabuse and Van Eyck, most of them lent by Sir Francis Cook. Among the Mabuses are a "Virgin and Child" (6), a large and elaborate scene of "The Holy Women at the Sepulchre" (9), a curious and interesting picture of "Hercules and Omphale" (12), two nude figures seated in a stone-built alcove, and finished with the greatest precision and hardness; and Lord Northbrook's "Virgin and Child Enthroned" (61), the Virgin, within a richly-carved throne, looking curiously like a modern lady. A finer picture in regard to expression is that of the "Virgin and Child" (63), also lent by Lord Northbrook, and labelled in the catalogue "Early Flemish School." The face of the Virgin here is exceedingly tender and beautiful in character, and the architectural screen behind her is worth study. The picture has been ascribed by different critics, formerly, to Memlinc or to Mabuse. Some part of the interest of these pictures lies in the architectural and landscape details of the backgrounds. Thus, in the Van der Weyden "Virgin and Child" (2), the Gothic porch is a most interesting and painstaking study of the late Gothic detail of the German type, painted in that nondescript grey which served the early Flemish artists as the general tone of masonry. In the Mabuse No. 6, the loving way in which the small bit of landscape seen through the window is painted, is most characteristic of the thorough earnestness of these early masters. In No. 9 the background shows an elaborate view of Jerusalem, with crowds of buildings, the Mosque of Omar conspicuous among them; how did Mabuse get hold of this? It is hardly possible to suppose that he had visited Jerusalem, in those days of difficult and dangerous travelling. In the "Virgin and Child" by "Maître de Flemalle" (48), an open window shows the distant market-place and cathedral of a town, every detail of the cathedral carefully made out in miniature. These painters at least had never conceived the notion of the labour-saving theory of painting called "Impressionism." The last-named picture also offers a curious example of the manner in which they would work in details in a kind of symbolical manner; in this case there is a round wicker-work screen behind the head of the Virgin, painted with the greatest realism, but so placed as to suggest also a halo for her head.

Among the Van Eycks, besides the one already mentioned, are a "Head of Christ" (20), lent by M. de Somzée, almost painfully deficient in beauty or expression; a very fine picture, from the same owner, of "St. Mary Magdalene and the Donor" (27), in which the details and ornaments of the costume are specially worth attention; and a "Virgin and Child" (82) belonging to Mr. Fletcher Moulton. Among others of the most attractive works in the room are Mabuse's "Adoration of the Magi" (4): the same painter's "Piety of Raymond Count of Toulouse" (31), especially interesting from the curiously naïve way in which he has attempted to indicate the emotion of some of the spectators; Antonio Moré's fine portrait of Archbishop Adamson (37), which brings us into quite another world of art; Van der Goes' "St. Victor with the Donor" (51), and a very inte-

resting "Portrait of a Lady" (89), of the Early Flemish school, lent by Mr. Brocklebank.

The south room contains a miscellaneous collection of paintings of the British School. Among these is Reynolds's well-known stately portrait of "Mrs. Nesbitt as Circe" (190), accompanied by that curious panther evolved (surely) from Reynolds's inner consciousness, and alarming to the spectator if not to Circe; the same painter's sumptuous full-length portrait of Elizabeth Gunning — she of the curtain-ring marriage; and Gainsborough's half-length of the "Duchess of Cumberland" (195), a picture distinguished by fine colour and the expressive treatment of the head. Gainsborough's "Market Cart" (181) gives one the impression of having "gone" a good deal, though the sunlit clouds seen above the tree-tops retain their brightness and freshness. Mr. Orrock lends two Turners, "Walton Bridge," and "Newark Abbey" (189, 191), the former the finer work, and more true to the facts of the scene than is sometimes the case with Turner. The small but powerful "Hilly Landscape" by Constable (177) it is interesting to compare with Richard Wilson's mild and conventional "Lake of Nemi" (179)—the contrast between natural and "classical" ideals in landscape.

LETTER FROM PARIS.

THE "New Salon" has decided not to open its doors this year, the management thinking that the immense collection of contemporary and "retrospective" art which will be seen in the great exhibition, where there will be more than ten thousand works collected, will render other art exhibitions superfluities to the public. It remains to be seen whether the event will not prove that the "Old Salon" would have been wiser to have followed the same course, for the special installation which it will have to make in the rather out-of-the-way quarter of Grenelle will lead to great expenditure, with a doubtful return, as the mass of visitors will certainly crowd to the great show.

The close of the year has been marked by the opening of a very interesting exhibition by the "Société Internationale de Peinture et Sculpture," arranged in the Georges Petit Gallery; the seventeenth given by this society. Mr. Whistler exhibits works with eccentric titles, familiar to Londoners but strange to Parisians—"Or et Violet," "Bleu et Or," "Rose et Brun" &c., but which, it is generally agreed, are "compositions ravissantes" and very harmonious in colour. Possibly when the novelty is worn off this enthusiam will be a little diminished. M. Besnard figures in the exhibition with two portraits and a landscape of audacious colouring. Among other works may be mentioned the landscapes by MM. Felix Bouchor, Pierre Prins, Robinson Douglas, and Ch. Gosselin, Breton coast scenes by M. Legout-Gérard, flower-painting by M. Lorimer, views in London by M. J. J. Rousseau, the "Centaure" and "Nymphe" by M. Franz Stuck, "Impressions Parisiennes" by M. Vauthier, and "Danseuses" by M. Pierre Carrier-Belleuse. In sculpture there are some powerful studies by M. Constantin Meunier. Besides these, M. Salique exhibits in a special case some jewellery of great delicacy of design and execution.

There is a good deal of interest also in the small exhibition by M. Lebourg, the landscape painter, at the Bernheim Gallery, in the Avenue de l'Opéra—views in Paris and Rouen, on the Seine and elsewhere, studies of effects of sunshine and mist, &c.; which show the many-sided talents of this artist, of whose works the Luxembourg and the Municipal Museum possess some remarkable examples.

The Louvre is putting itself into festival array for the exhibition period. M. Redon, the architect, has been commissioned to furnish luxuriously the old Salle des Etats in the Pavillon de Flore, where also all the Rubens's in the national collection will be placed; the pictures are to be hung at wide intervals and separated by sculptural decorations heightened with gold. The new room will be entered by a wide bay decorated with columns. The ceiling is to be ornamented with medallions lightly gilt. The work is being very well carried out, and the new arrangement will bring together in a good light works which were formerly scattered over the galleries in situations very deficient in light. In connexion with the Louvre it may be added that Madame Marjolin, the only daughter of Ary Scheffer, who died a few weeks ago, has left to the museum her father's "Paolo and Francesca" (one of his best pictures), and six portraits from his hand, among them those of Arago and Lamartine. The Versailles museum has also received a bequest of nine portraits by the same artist, of considerable historic and artistic interest.

M. Moreau-Vauthier, the sculptor, has just completed a statue which is to form a prominent object in front of the principal entrance gateway to the great Exhibition from the Place de la Concorde. It represents a Parisian lady in modern costume, forming we presume a kind of symbolical representation of Paris, stretching out her arms towards the expected crowd of visitors as if to welcome them to the Exhibition. It is a pretty idea, though perhaps, from the sculpturesque point of view, a more abstract and ideal figure would have been preferable.

The Municipal Council has appealed to the Parisian public for an expression of opinion as to the advisability of the formation of a subterranean tramway line, to form a kind of complementary service to the Metropolitan railway. The proposed line would part from the Place des Abbesses, at Montmartre, and join the Montparnasse station, along the line of the following streets—Houdon, Pigalle, Blanche, St. Lazare, Pasquier, De l'Arcade, Boissy D'Anglas, Place de la Concorde, Boulevard St. Germain, Rue du Bac, Rue St. Placide, and Rue Rennes. The Seine would be tunnelled for it about 50 yards below the Pont de la Concorde.

At the Ecole des Beaux-Arts the jury of architecture have awarded the Godebœuf Prize to M. Lebret, pupil of MM. Guadet & Paulin. The subject was "Un Plafond en Menuiserie." At the Hôtel de Ville M. François Flameng has been appointed by the Municipal Council to execute, in the Salon des Arts, an allegorical panel symbolising "Music," formerly commissioned from the late M. Ranvier. The Municipal Council, which concerns itself a good deal with the encouragement of etching, engraving, and lithography, has also appointed M. Le Couteux, who obtained the Medal of Honour for engraving at the last Salon, to engrave M. Lhermitte's large picture of "Les Halles de Paris." M. Ardail has been commissioned to engrave various works by M. Albert Maignan, and among other similar commissions M. Sulpis is to engrave M. Dalou's great group of the "Triumph of the Republic."

The death is reported, at Rome, of a young architectural pensionnaire of the Villa Medici, M. Louis C. H. Pille, who had only recently arrived there. M. Pille was born at Paris in 1868, and was a pupil of M. Pascal; he had obtained a medal of the third class in the Salon of 1894 for his drawing of the Galerie Dorée at the Bank of France. He gained the Grand Prix de Rome in 1896, for his design for an "Ecole Supérieure de la Marine." He was a nephew of Henri Pille, the painter, who died in 1897.

Illustrations.

LIGHTS AND SHADOWS OF A BYGONE DAY.

WE have to thank the careful historical writers and students of our own day for having, by their patient research and indefatigable investigations, enabled us to understand, to a great extent, that most interesting period of the world's history known as the "Middle Ages." We now know that to speak of these times as "the Dark Ages" is absurd, because, as Dr. Wace says, "the men of the Middle Ages were great architects—architects in thought, in society, in politics, in ecclesiastical organisation, no less than in stone and marble. In every department of human life they laid deep foundations. And they reared mighty structures, under which to this hour our religion is sheltered, our learning fostered, our social life controlled, and to which even the framework of our political institutions is in a great measure due."*

Yet, on the other hand, few people accept unquestioned Digby's enthusiastic, but certainly charming, picture of the Middle Ages presented in the pages of "Mores Catholici," because of the undoubted cruelty, intolerance, and blind partisanship of the period, which are revolting to our ideas. Yet was it not the remarkable contrasts presented by these times that make them so interesting to study? And does it not add that special quality to art (especially architecture) which is, perhaps, its greatest charm?

It is, perhaps, beside our subject to attempt to inquire whether the people in the Middle Ages were happier than they are now. As a rule, it is taken for granted that those people and those times are the happiest that have no history, and consequently are spared great contrasts and violent excitement. Yet Wordsworth, the most philosophic poet of the nineteenth century, certainly thinks otherwise, as in his poem, "St. Bees," we find the following passage:—

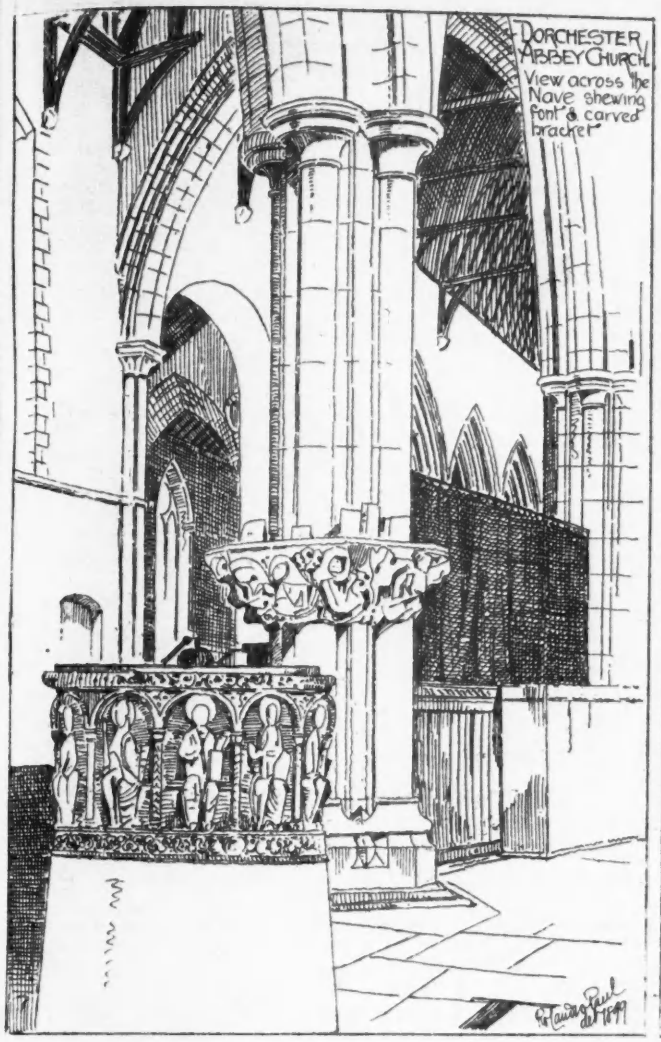
> "If life were slumber on a bed of down,
> Toil unimposed, vicissitude unknown,
> Sad were our lot. No hunter of the hare
> Exults like him whose javelin from the lair
> Has roused the lion; no one plucks the rose
> Whose proffered beauty in safe shelter blows
> 'Mid a trim garden's summer luxuries,
> With joy like his who climbs on hands and knees
> For some rare plant, yon Headland of St. Bees."

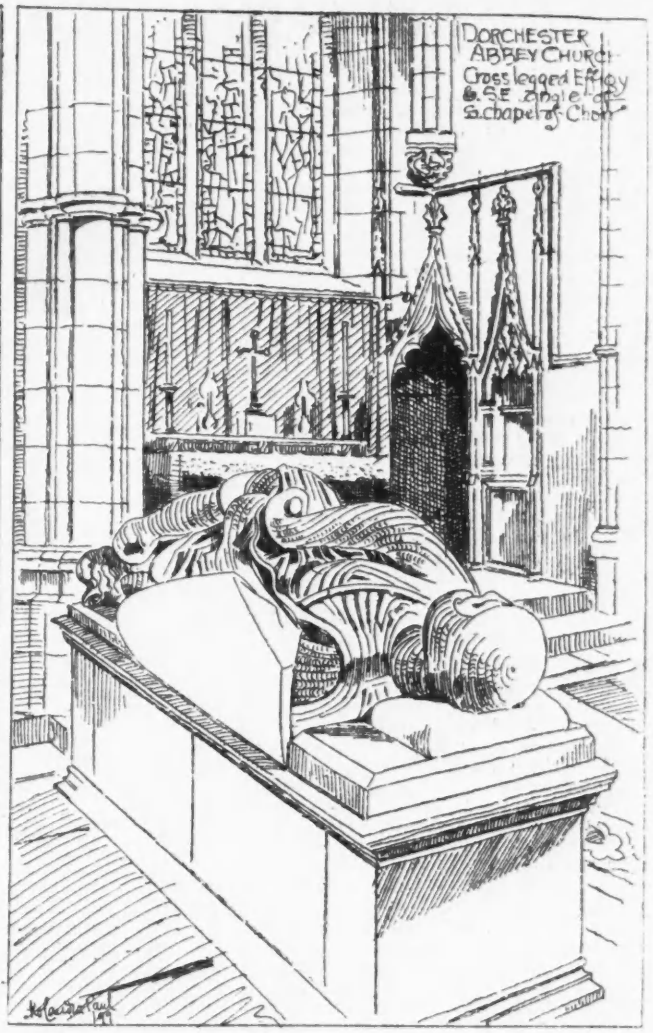
We refer to this diversity of opinion because, if Wordsworth is right, it accounts for much of the charm of the Middle Ages, which the usual view of the subject would naturally exclude.

There is, of course, one great difficulty in understanding this period, which must at once strike all thoughtful readers and students, and that is the strange remoteness of the Middle Ages. We do not mean remoteness as to actual date, but as to sentiment and feeling, and on this ground it may be safely asserted that they are more distant from us than Greece, Rome, or possibly even ancient Egypt? What, for instance, can be further removed from the nineteenth century than Dante? Yet some passages in Aristotle might have been written the week before last. Note, for instance, that which refers to the condemnation of "cornering." The fact is, absolute dates help us little. Say, for instance, that the fourteenth century was some 5,000 years back, and the twelfth century was the "infancy of the world." Although it is incorrect as to fact, it is more in accordance with true ideas, just as the map of the world in the "Nuremburg Chronicle," which shows Europe as about three-quarters of this hemisphere, gives one a far better idea of the views entertained at that time (1493) than would the most correct geographical chart.

In studying the Middle Ages and their people we find a youthfulness amongst them that is very remarkable. The men must have been grown-up schoolboys, retaining the ardour, generosity and intense partisanship of the boy, together with his thoughtless cruelty and complete indifference to the feelings of others; ready to "go through fire and water" for his friends, but unmerciful in his views regarding boys of an opposition school; firmly convinced of the absolute correctness of his own views and the rectitude of his own principles. Now, such a creature as this, suddenly raised to man's estate, would give us an idea of the mediæval citizen. His generosity, self-sacrifice, intense devotion to his cause, determination to punish what he considered wrong regardless of all consequences, unmerciful treatment of all *he thought* to be wrong-doers, and thorough want of all consideration in their regard, would be his most marked features; his laws would be "a terror to the guilty;" his enemies would have cause to tremble; if his friends were injured, he would take it for granted that they were suffering in a just cause, and immediately rush to their assistance, utterly regardless of all consequences. *Our* ideas are to do away with partisanship as much as possible, to do away with violent contrasts, to allow every one to think as he likes, to tone down everything, and rather to suspect enthusiasm, whether it is found amongst our friends or our enemies. We try to judge everything and everybody from an equal standpoint. We do not favour our friends; in fact, we trust them no more than our enemies. We rather feel inclined to criticise our own party more severely than that opposed to us. We make our laws and legal tribunals so lenient that they often become a greater terror to the innocent than to the guilty party. In fact, we dislike contrast and enthusiasm. Of course, this has its good side; but it is not conducive to great art, especially architecture, because architecture, like all other arts, should express the wants and feelings of its time; whereas, how can you express, in

* "The Bampton Lectures," delivered before the University of Oxford by the Rev. Henry Wace in 1879, page 166.





brick and stone, the wants of an age which simply "wants to be let alone," or the feelings of a people whose whole study is how to subdue sentiment?

In the Middle Ages the whole mode of thought was absolutely the reverse of this, and sentiment and contrast were encouraged. The architecture of the period displays these characteristics in a marked manner: it is more impulsive than scientific, more perfect in design than construction; everything is built not only to serve its purpose but to express it. If we wander through the streets of a mediæval city, what a contrast there is between the graceful cathedral with the delicate vertical lines of its steeple, and the heavily machicolated horizontal parapets of the frowning castle; between the picturesque gabled houses, pierced with many framed windows glistening in the sunlight, and shining out from the intricate confusion of old brown timber beams or ruddy brickwork, like drops of dew upon the leafless tree of autumn, and the massive stone gates and bridge.

In the "good old times" we should have seen still greater contrasts; the frowning castle might have been "garnished" with men hanging, and the bridge by some poor sufferer in the stocks; perhaps a poor widow with her child might be kneeling before the crucifix on the bridge praying for the soul's repose of those whose bones were bleaching on the castle gallows. The law was, indeed, a terror, and delighted in exhibiting and parading itself in its most hateful aspect, and forming in this respect the greatest possible contrast to the church, the surroundings of which all expressed peace, grace, benignity, and beauty.

H. W. BREWER.

DORCHESTER ABBEY.*

THE village of Dorchester, about nine miles from Oxford—not to be confused with the capital of the county of Dorset—bears few traces at the present day of its former importance as a city, and the centre of an important diocese. From early Saxon times, however, to the Norman invasion, Dorchester was a place of considerable note; ecclesiastically it may be said to have commenced in the time of Birinus, who established here during his episcopate, A.D. 634-648, a foundation of secular canons. During the latter years of the seventh century, and again about a hundred years afterwards, Dorchester had no bishop, and in 1092 the See was finally removed to Lincoln by Remigius. The importance of the city thus became considerably reduced, although in the place of the cathedral arose a foundation of Canons Regular of the Order of St. Augustine, the church of which in later years must have become one of the most beautiful of our monastic churches, and, in spite of time and mutilation, retains much of its magnificence. Three other churches are mentioned by Leland, and the sites and traces of foundations are still shown. The abbey was dissolved in 1534, when John Mershe, the last abbot, and six others subscribed to the King's supremacy. The church was bought by Richard Bewforrest (doubtless of the same family as the Abbot of Dorchester of that name), for the sum of 140*l.* and bequeathed to the people of Dorchester as a parish church. "My bodie," he directs, "to be buried in our Lady Ile within the churche of Dorchester aforesaid," and further, "Itm I bequeath the abbey churche of Dorchester which I have bought, and the implements thereof to the Parysh of Dorchester aforesaid, so that the said Parishioners shall not sell, alter, or alienate the said churche, implements or any part or pell thereof withoute the consente of my heires and executors."*

The first view of the church, approaching it from the south, does not suggest its monastic character, and the long line of its roofs, and simple square western tower gives it more the appearance of a village church of considerable length. This impression is removed, however, by an inspection of the north side and the interior. For picturesqueness the interior, though in many ways simple in arrangement, would be difficult to beat, and the building as a whole is a highly interesting example of the gradual growth of a monastic church from Norman to Perpendicular times. A restoration begun by the Oxford Architectural Society in 1864 was carried out by the late Sir G. G. Scott, and the eastern gables of the presbytery aisles have been restored, and the fittings generally made more worthy of the church.

Some of the masonry has been termed Saxon, but nothing at present visible can with certainty be antedated to the Norman period. To the Norman church belong the four piers of the "crossing," the whole of the north wall of the nave, a portion of the south wall, what remains of the west wall of the north transept, and perhaps the core of the wall south of the "crossing," which occupies the site of the west wall of the south transept, and now divides the south aisles of the nave and choir, and seems to have undergone considerable changes, if not rebuilding, when the aisles themselves were built. The Norman features now *in situ* consist of the west arch of the "crossing," and a doorway, now blocked, formerly leading from the north transept to the cloister on the north side of the nave. In the present north-west angle of the north transept is a jamb of a window, probably Norman, and in the walls of the nave, high up, are jambs of windows partially revealed. These may, however, be of Decorated date, like the two remaining on the north side. East of the "crossing" nothing remains visible of Norman date, and the Early English period which followed it is represented by the north aisle of the presbytery. It appears that in the latter half of the thirteenth century the rebuilding of the eastern arm was begun, and that the work was begun at the east end, and in such a way as to allow the Norman work to remain until the new work was nearly completed. How far this scheme was carried out is now impossible to determine, but from traces of a buttress at the angle of the north aisle and presbytery, and indications of earlier work in the corresponding position on the south, it seems evident that a considerable amount was built. In the north aisle are wall shafts with dog-tooth ornament on the caps for carrying the vault, and the string course below the window

* The series of the "Abbeys of Great Britain" is continued this month with illustrations of Dorchester. For the list of Abbeys which have already appeared, and for particulars of future arrangements, see front page of cover.

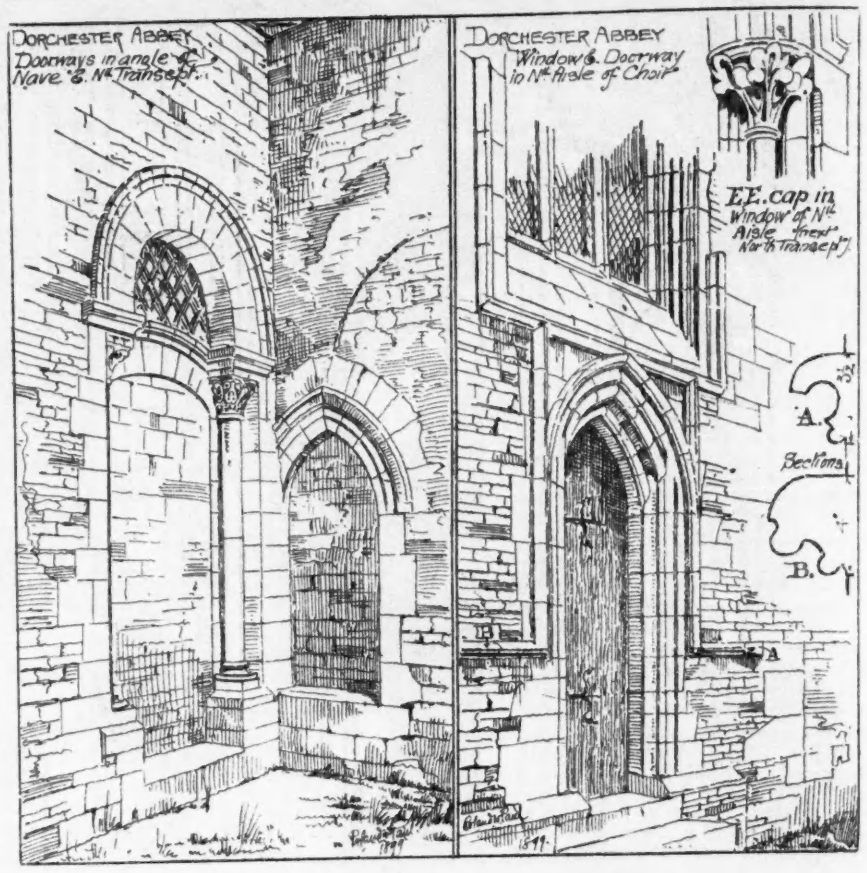
* Addington. The Abbey Church of Dorchester.

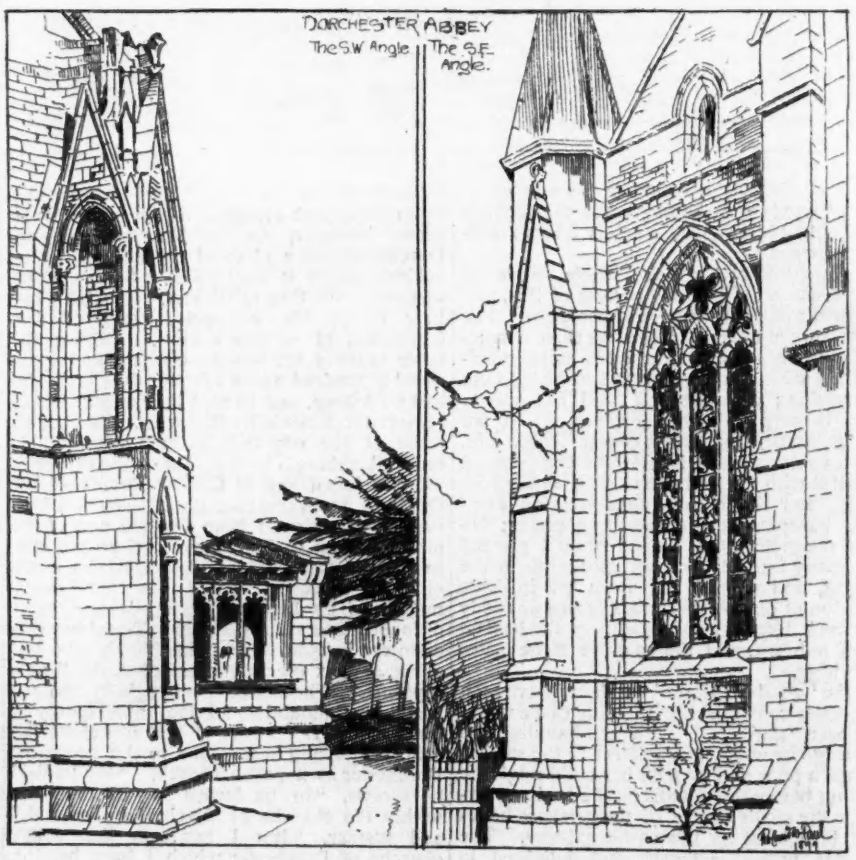
cills stop at the third bay from the east. At this point the return wall of the north transept is visible, and outside the string course below the windows is returned, but has a later section. On the north side of the north-east pier of the "crossing" is a clustered column with beautifully carved caps, and a corresponding one at present built into the north wall. These carry a deeply-moulded arch. The wall between the return wall of the transept chapel and this column is obviously work used to fill up the gap, and the three-light window was probably the east window of the chapel. On its western side is an Early English cap which does not correspond with the work in which it is set. At the conclusion of the rebuilding of the north aisle in the thirteenth century, the Norman chapel seems to have been remodelled, and an arcade was built to give access to the chapel and choir aisle from the transept. Owing to the absence of buildings on the south side greater freedom was possible, and the extra width of the south aisle or "Lady Ile" is no doubt owing to this. The south aisle appears to have been of three bays only (one bay being on the site of the south transept). In the easternmost bay a piscina still remains, and the east wall probably returned near this point. The presbytery would thus have projected one bay eastward, and would account for the double piscina situated just to the west of the present altar rails. In later Decorated times the arcades of the presbytery seem to have been rebuilt, each arcade being divided into three spans. The positions of the columns do not correspond either with the vaulting shafts of the Early English north aisle or with the buttresses of the south aisle. The easternmost arch on the south side is of smaller span, the rest of the space being occupied by the wall in which is placed the double piscina already referred to. At this time the south aisle was lengthened, the new eastern wall being in line with that of the north aisle and the presbytery. It was divided into two aisles by columns and low screen walls between the chapels, and the four spaces were vaulted and a room built over, approached by the turret staircase in the south-east angle.

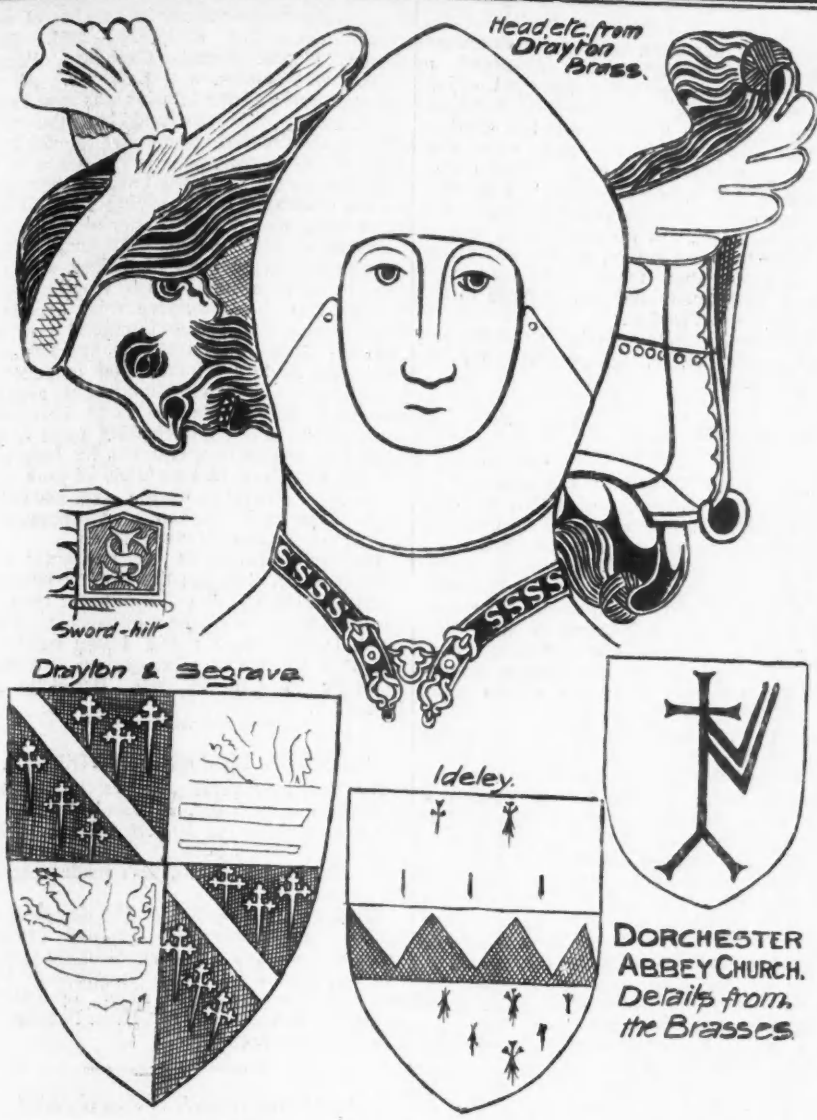
The next addition was probably the south aisle to the nave. If a Norman south aisle existed, all trace of it has been removed, and the new aisle was of the same width as the south aisle of the choir. The wall between was retained, and an altar erected against it, on a platform of four steps.* The Norman south wall of the nave was pierced by an arcade of three bays, doing away with any windows that might have existed on that side, although traces of the jambs of these windows can still be seen. The south aisle has apparently always be known as the "Parish Church." A feature of the churches of the Augustinian Order was that a portion of the west part of the church was generally, if not always, parochial. Doubtless before the enlargement the west part of the nave was the parish church, and, after the extension of the aisle, the parochial altar was removed to it. What appears to have been the last important addition to the church was the further lengthening of the presbytery, the projection beyond the east walls of the aisles being about 18 ft., approximately the same projection as that of the former presbytery before the eastern chapels were added to the south aisle. Three large windows were introduced, all of remarkable design and beauty of detail. The east window is of six lights, divided by a massive buttress in the centre. Over this is a traceried circle, a modern restoration on the old lines. The window resembles in design the east window of the south transept chapel at Christchurch Cathedral, Oxford (illustrated in the *Builder*, August 9, 1890). The window on the north side is of four lights, a "Jesse" window of unique design. The stonework is designed to represent the branches of the tree, and besides the figures, now much mutilated, in stained glass are a second series carved in stone, placed against the inner faces of the mullions, with a recumbent figure of Jesse at the bottom. This window is shown in the general view of the exterior, and the interior was illustrated in *Builder*, August 16, 1890. Both these windows are of late Decorated date and the rere-arches have three rows of ballflower introduced into the mouldings. The parapet on the exterior is similarly decorated (see exterior view). The third window, that on the south, approaches more to Perpendicular in its design. It is of four lights, and underneath are three sedilia and a piscina with elaborate canopies. Behind the sedilia are small triangular windows now filled with glass of early date, removed, no doubt, from a part of the church taken down to make way for the new work. A tower doubtless stood over the "crossing," but this has entirely disappeared, the present western tower being of Post-Reformation date. In it are hung six bells.

The present ritual arrangement of the church is, of course, quite modern. The ritual choir before the Dissolution would have been under the "crossing," with the *pulpitum* or rood-screen immediately westward. An opening in the wall remains at this point (on the south side), and evidently connected the rood-loft with a gallery or some such structure, situated in the south nave aisle, against its east wall. Against the western face of the easternmost detached column of the nave arcade is a large projecting bracket curiously sculptured with crouching female figures and foliage. From its size it formed an important feature of this part of the nave; and at this point a screen appears to have crossed both nave and aisle, the space between it and the *pulpitum* in the nave forming a retro-choir.

* The buttress now at the south-west angle is of earlier date than the nave aisle, and, from indications in the wall, appears to have been removed from the south-west angle of the choir aisle when the nave aisle was built. (See plan.)





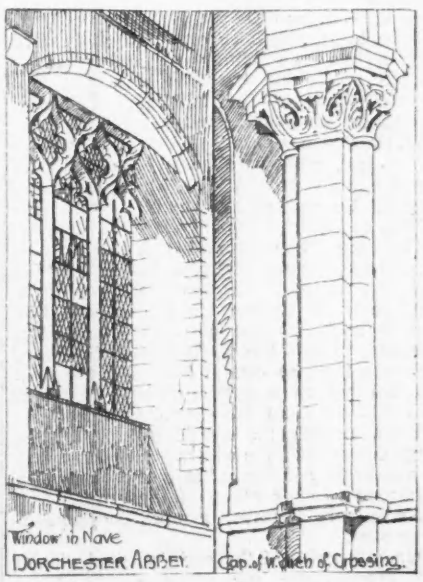


The base of a wooden screen—apparently *in situ*—still exists in the eastern bay of the arcade, dividing the nave from the aisle. Near it are remains of encaustic tiles.

The great length of the presbytery east of the "crossing" was probably very fully occupied by the various monuments in which Dorchester was so rich, and an important place must have been reserved for the shrine of St. Birinus—fragments of which have been found built up in the recess on the north side of the nave near the "crossing." It is now lying near the west end of the nave, and seems to have measured 8 ft. in length and 2 ft. in width, divided into four bays with rich vaulting and colouring.

In the floor of the eastern portion of the choir aisle, and in the presbytery are placed the principal effigies and slabs, many of the latter having matrices of brasses, now destroyed. In the presbytery is a complete brass of Abbot Rychard Bewforrest—a good example of costume. Next it is a matrix of a small brass with kneeling figures, and near the south wall a fine slab, formerly with a figure of a knight under a triple canopy, and two shields. Two slabs are here of Abbots of Dorchester. One that of Abbot Sutton, with a hand holding a pastoral staff, four crosses in the angles, and a marginal inscription: "Johannis de Suttona dictus quem christe corona Abbatis gessit vices hic qui requiescit." The other, a white stone bearing traces of an incised figure, and a marginal inscription now much worn: "Hic jacet Dñs Rogerus quondā prior prioratus de Rowton in com. Stafordie, postea abbas monasterii de Dorchester, Lincoln Dioc, necnon Epus Lidensis, cuius anime p'pcietur deus Amen." John de Sutton died 1349, and Roger de Rowton presided about 1510."*

In the south aisle arranged in two rows in front of the altar steps of the chapels are a larger number of monuments. There are four effigies: a Bishop (of fourteenth century workmanship, but supposed to represent Bishop Æschuine, A.D. 991); a knight on an altar tomb (one of the Segraves)†: a cross-legged effigy of a knight (see illustration); and an effigy of John de Stonore, Judge, and Chief Justice of the Common Pleas in the reign of Edward III. The brasses consist of an imperfect one to two members of the Drayton family; the upper part of the male effigy in armour only remains, the head resting on a tilting helm with the Drayton crest, a Saracen's head. Near it a matrix of a brass of another member of the same family, with two shields remaining, charged with the arms of Drayton quartering Segrave. A small brass to Rychard Bewforrest and his wife is to the west of the Stonore monument, and a small single figure to the east of it. There are also three matrices of small brasses, and near the Segrave effigy is a stone which formerly had three shields—one only now remains with the arms of Ideley, ermine, a fesse dauce'te. These shields evidently formed part of the Ideley brass mentioned by Addington, p. 137, quoting Lee's M.S. A slab with an early cross in low relief, the matrices of two others, and a fourth with remains of a marginal inscription also remain, and are shown on the ground plan. In the nave are three slabs—two near the font, in the south aisle, with matrices of brasses, and a third near the north wall of the nave, a coped stone with a plain cross and a marginal inscription in Lombardic letters. The remains of the so-called shrine of St. Birinus, already noted, have been placed here, and many delicately-worked fragments of caps and shafts, thought to have belonged to it, are now preserved in the vestry.



A considerable quantity of the old glass still remains. In the small triangular openings at the back of the sedilia is glass of early date, with figure subjects in circles, probably preserved from the earlier church. In the two Decorated square-headed windows on the north side of the nave is some contemporary glass, chiefly canopy work.

The three great windows of the presbytery are all worthy of careful attention. The east window, although restored, with some modern glass inserted, still retains a great deal of ancient glass, chiefly figure subjects. Among them are the Virgin and Child, the Annunciation, St. Michael, St. Lawrence, and many smaller subjects. The glass in the north window consists entirely of single figures forming part of the tree of Jesse, in the stonework; and the south window has a fine series of shields of arms, of which between twenty and thirty still remain. Three others, formerly, we believe, in the east windows of the choir chapels, belong to the same series and date. Two out of the three windows have elaborately-sculptured figures introduced singly and in groups on the mullions. Those on the north window refer to the tree of Jesse, and on the transom of the window on the south side are a series of figures forming a procession.

The parapets generally are of simple design; that of the choir and presbytery, however, is, on the north side, ornamented with ballflower, and its extent westward marks the rebuilding in the fourteenth century very clearly (see exterior view).

The south is the side of the church usually seen; the north side, however, is more picturesque, and the general view has been taken from the north-east. The east window and "Jesse" window of the presbytery are shown, and also the beautifully-designed windows of the north aisle, and the portion westward partly on the site of the north transept, of probably Post-Reformation date. Beyond is seen the nave, with its two square-headed Decorated windows and round-headed modern lancet, the whole backed by the mass of the embattled western tower. A little west of this tower is a building bearing traces of fifteenth century windows and doorways. Its roof and turret show, in the view, close to the western tower.

There are many points of interest in this beautiful church, of which space does not allow of detailed description: the Norman doorway with its carved capitals leading from the transept to the cloister, the Decorated doorway in the nave wall close to it, and the traces of a large Norman arch over the latter; the curiously designed doorway in the north aisle of the choir, and the foundations of the destroyed north transept and chapel; the niche on the face of the north-east angle buttress of the presbytery with chevron ornament and pedestal for a figure; the design of the north-east, south-east, and south-west angles of the church; the beautiful piscina and turret stair doorway in the south-east angle of the presbytery chapel; and the crypt or vault, about 11 ft. square, below the altar platform in the south aisle of the nave. Most of these, however, are either shown in the general view or illustrated in the text.

The font has an ancient leaden bowl with seated figures under an arcade, the shafts having spiral and chevron ornament, and finished both at the top and bottom with a band of conventional foliage. The font, which has been placed on a modern plinth, now stands in the south aisle of the nave (see sketch).

The monastic buildings were on the north side; but, with the exception of the weathering of the cloister roof against the walls of the nave and north transept, nothing remains of

* Addington. The Abbey Church of Dorchester.
† See *Builder*, August 16, 1890.

them. The south porch is Perpendicular, the upper part being of wood. Near it is a churchyard cross, with the head restored. Among the fragments of carved work in the church is the head of a cross, having the Crucifixion sculptured on one side and the Crowning of the Virgin on the other. Throughout the church the details are excellent, and some of the mouldings, especially the arcades of the presbytery, unusually elaborate. In the absence of documentary evidence there must remain many puzzling points about the building; but, judging from the architectural features, there seems little doubt but that the process of gradual enlargement was carried out much on the lines suggested in the foregoing notes.

ROLAND W. PAUL.

ST. SOPHIA, CONSTANTINOPLE:

INTERIOR VIEWS LOOKING EASTWARD AND WESTWARD.

THESE are reproductions of two elaborate water-colour drawings made by Mr. A. E. Henderson, to whom we are indebted also for a long article on the great church, which will be found on another page.

With reference to these drawings, Mr. Henderson writes:—

"The length shown from apse to western wall is about 279 ft., the breadth of the nave 110 ft., and the height to the crown of the dome 179 ft. Painted thereon is a long text from the Koran. The great discs shown are of canvas painted green, with gilt lettering, bearing the names of Allah, the Prophet, and the six Caliphs.

The Sultan's Tribune within the north-east exedra, was erected by Fossati in 1849.

Within the western exedra are two beautiful Marmora marble fountains, used for ablution. They are said to have been brought from the island of Marmora or from Pergamos by Marad III., 1574-97.

The church being out of the axis of the holy city of Mecca necessitates the Mihrab in the apse and the whole of the carpeting to be set askew.

The wooden balustrading round the cornices, the chandeliers, and tribunes have been omitted.

My thanks are due to our British Embassy and the Turkish Government for obtaining the opportunity to make these drawings."

BLENHEIM.

IN spite of many defects, Blenheim will always hold its distinction not only as the most important work of its architect, Sir John Vanbrugh, but as one of the most stately and remarkable of the great English country mansions of the Renaissance period. If there is a want of refinement in parts, there is at all events nothing little about it; as Mr. A. E. Street said in a paper on the subject communicated to the Institute *Journal* ten years ago—"It looks emphatically what it was intended to be, but was not—a nation's offering." This is in keeping with the expression in the more quaint English of the Vitruvius Britannicus—"The manner is grand, the parts noble, and the air majestick, of this palace, adapted to the martial genius of the patron." It was intended, in short, as a palatial residence offered by a grateful country to a universally victorious general. Unfortunately, as is hinted in Mr. Street's words, the building was not a free offering after all; on the death of Queen Anne the public supplies were stopped; the completion of the building, which was not ready at the death of the Duke of Marlborough, was left in the hands of the despotic "Sarah," who constituted herself clerk of works, and dismissed Vanbrugh with insult, leaving him to satisfy the lawful demands of some of the contractors out of his own pocket, but fortunately not presuming to alter the design.

Blenheim was commenced in the early years of the eighteenth century; the grant for it was made in 1705, and Vanbrugh instructed to prepare a model. The plan, as is well known, is a very defective one in a practical sense, though affording a fine outline on which to erect an effective design; in the case of the staircases it is not even architecturally effective, as they are far too small for the palatial scale of the building, besides being too much hidden out of sight for effect. The exterior, especially the entrance front shown in our lithograph view, is, however, a good illustration of the merit which Reynolds, looking at architecture with the eye of a painter, discerned in Vanbrugh—"to support his principal object he introduced his second and third groups and masses;" he "understood the conduct of his background, and took care that his building should not abruptly start out of the ground without a preparation." The great erections over the angle pavilions, with their enormous finials, are no doubt quite out of scale with the other details, yet there is something imposing about them, and they impart a kind of castellated character suitable to the palace of a great soldier.

The two views were both drawn and finished on the spot by Mr. W. Monk, expressly for this publication.

THE PALACE HOTEL, AVENUE DES CHAMPS ELYSÉES, PARIS.

M. GEORGES CHEDANNE, the architect of this fine hotel, covering a surface of over 3,000 square metres, and having its principal façade on the Avenue des Champs Elysées, has followed and applied in his scheme of design the principles of his master, the well-known architect, M. Guadet. The difficulty of successfully treating such a building in an artistic manner, and avoiding the monotony and endless repetition of architectural elements necessitated by a façade over 100 metres long, comprising seven stories of ordinary rooms and bedrooms, the height and sizes of which could not be varied greatly or sacrificed to the necessity of design, with window openings of nearly similar size—in fact, a problem as ungrateful as that of the ordinary *maison à loyer*—has been admirably met by M. Chedanne.

The series of bow-windows rising from the ground floor to the entablature, and crowned by a decorative order with detached columns and open pediment, forming a succession of loggie comprising the two roof stories, connected one with another by the carefully-studied balcony with its elegant vases; the graceful line of the bow-windows attached in an ingenious manner to the façade wall; the masses of sculpture work in bold relief, plentiful enough to produce a rich decorative effect, but sufficiently restrained for bringing into value the plain, unadorned surfaces, give evidence of the artistic temperament and facile imagination of the architect. The transition from the rich façade of the Avenue des Champs Elysées to the much simpler one of the Rue Bassano has been skilfully obtained by means of the fine stone bas-relief crowning the rounded angle of the building. This bas-relief is the work of M. Boutry, sculptor.

M. Chedanne, a Grand-Prix of the Ecole des Beaux-Arts, could hardly avoid expressing in his plan of the ground floor, which, of course, contains the various large public rooms pertaining to a hotel, the traditions of his academical training. The main lines of the plan lie along two principal axes placed at right angles one with another. The main axis, parallel to the Avenue des Champs Elysées, sets out from the covered carriage entrance in the Rue Bassano, crosses the vestibule of the grand staircase, the fine central hall, and the wide corridor leading to the table d'hôte. The other axis sets out from the state entrance on the avenue, crosses an elliptical vestibule, the large central hall, the winter garden, and ends at a secondary staircase behind. The general service and minor rooms of the ground floor are set out in a similar manner on perpendicular axes.

On either side of the main vestibule, facing the avenue, are the grand dining-room, restaurant, drawing-room, parlour, and reception room, the prettily decorated tea-room, and the table d'hôte dining-room, this last on the Rue de Galilée. The six stories of upper floors contain the suites of bedrooms and sitting-rooms, &c. The basement, containing all the services necessary to the life of a large hotel, is composed of four tiers of cellars in some portions, containing the accumulators for the electric lighting, the depôts for luggage, the low-pressure heating system, and the excellent arrangement of filters for clearing the drinking water at its entrance from the mains. The various portions accessible to the public are tastefully decorated with wall linings of various materials.

The public rooms of the ground floor are all very richly decorated; the central hall is especially fine. The various excellent and carefully-studied sculpture of exterior and interior is due to the talent of a number of well-known decorative sculptors—MM. Gasq, Boutry, Sicard, Baralis, Capellaro, Peynot, Soulès, Charpentier, and Lefebvre. All the sculpture-work of the interior was modelled in position, so as to judge of and obtain the proper effect of the finished work under interior lighting. M. Chedanne, who is himself a skilful modeller, carefully watched and superintended all the decorative work, giving with his own hand here and there masterful touches to blend the decorative and architectural work in difficult places, or even modelling such portions in his own studio. The resulting effect is such that the decorative work appears to have grown with the architectural work, and the stiff lines and unsuitable appearance of decorative features studied and modelled in studios far away from the building are avoided. The small *atelier* attached to M. Chevanne's drawing offices is an interesting proof of the architect's artistic temperament, for here may be seen models of various kinds of work, such as doors of charming design, sketched out in clay or wax by M. Chevanne and executed by skilled artists under his supervision.

The ceiling-panels of the restaurant were painted by M. Gervais; those of the drawing-room by MM. Lavalley and Riquet; the wall-panels of the table d'hôte dining-room are due to M. Dewambez, a rising young painter, a late Prix de Rome. The various decorative ironwork is due to MM. Bergeotte and Dauvillier.

REREDOS, BRISTOL CATHEDRAL.

NEARLY two years ago we published a reproduction from Mr. Pearson's drawing for the new reredos for Bristol Cathedral. We now give an illustration of its actual effect in execution, from a photograph made specially for this journal.

We gave a description of the design at the time of publishing the original drawing (*Builder*, February 26, 1898); we have only to add now that it has been executed in Bath stone by Mr. Nathaniel Hitch, of London, under the direction of Mr. H. L. Pearson, the son of the late architect.

EAST WINDOW, LONGWORTH CHURCH.

THIS boldly designed window has been carried out by Messrs. Powell & Sons from the cartoons of Mr. Heywood Sumner.

The whole colour scheme is produced with self-coloured or pot metal glass, except in the head, hands, and feet of the figure of the Saviour, which alone have been painted as far as necessary to give the modelling of the surface.

EXAMPLES OF ATHENIAN GRAVE-RELIEFS.

GOETHE in his "Italian Journey" visited the museum at Verona, saw the Greek grave-reliefs preserved there, and recorded his impressions in words remarkable for their instructive sympathy and insight. "The wind which blows from the tombs of the ancients comes with gentle breath as over a mound of roses. The reliefs are touching and pathetic, and always represent life. There stand father and mother, their son between them, gazing at one another with unspeakable truth to nature. Here a pair clasp hands.... To me the presence of these scenes was very touching. Their art is of a late period, yet are they simple, natural, and of universal interest. Here there is no knight in harness on his knees awaiting a joyful resurrection. The artist has, with more or less skill, presented to us only the persons themselves, and so made their presence lasting and perpetual. They fold not their hands, gaze not into heaven; they are on earth what they were and what they are; they stand side by side, take interest in one another, love one another, and that is what is in the stone, even though somewhat unskilfully, yet most pleasingly depicted." Goethe's words are memorable, yet it needs no Goethe to feel the charm of these simple monuments. Their appeal is direct, immediate. Moreover—and this to the Teutonic mind is of no small moment—they strike an unexpected domestic note; their homeliness goes home to us. We have imaged the Greeks in our minds as a people ideal, remote, perhaps a trifle inhuman; but in the presence of these Attic stelæ we realise with a pleasant shock of surprise that they were

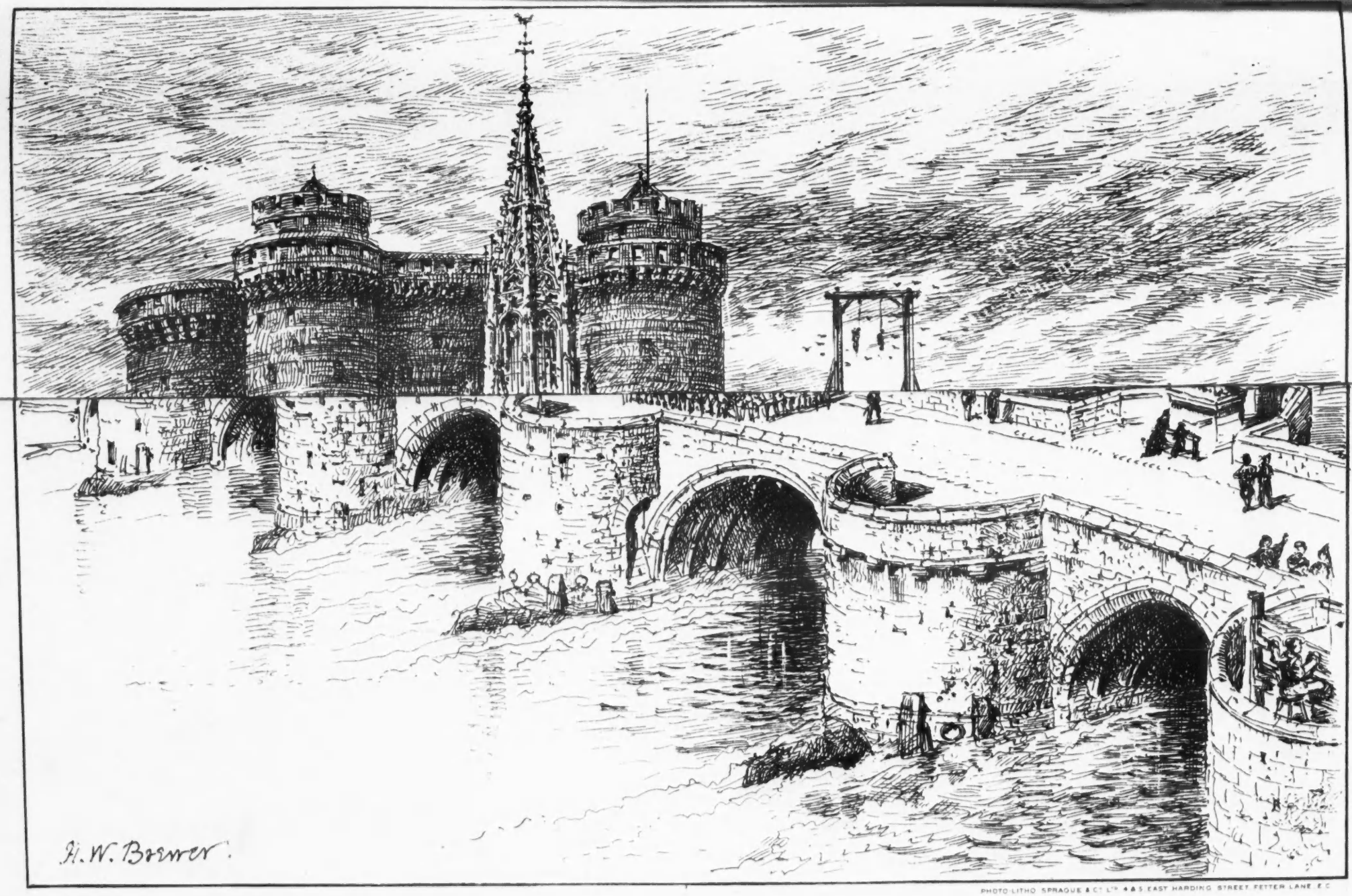


PHOTO-LITHO. SPRAGUE & Co. Lᵀᵈ. 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

LIGHTS AND SHADOWS OF A BYGONE DAY.—Drawn by Mr. H. W. Brewer

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STOL CATHEDRAL.

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ATHENIAN GRAVE-
LIEFS.

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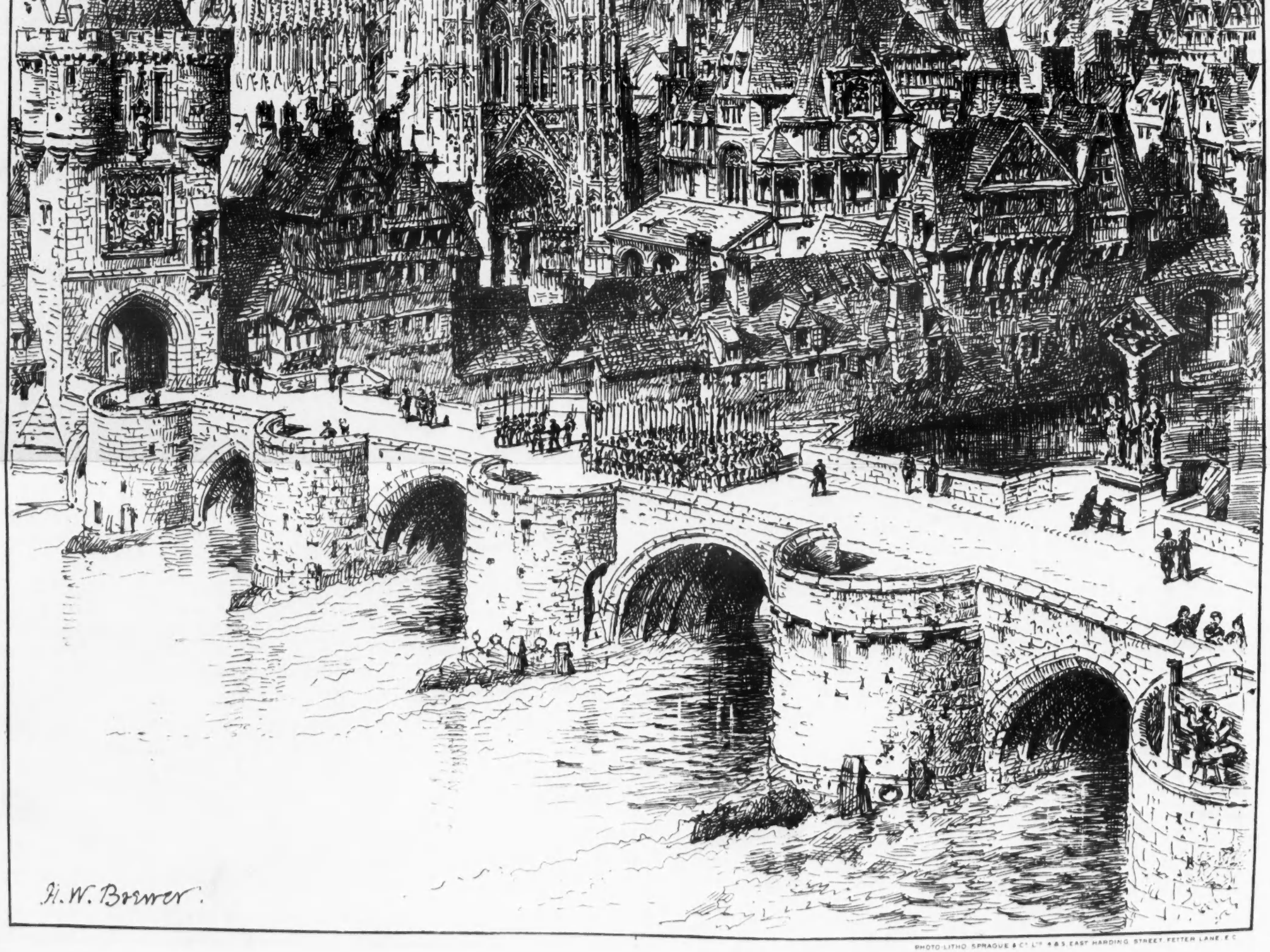
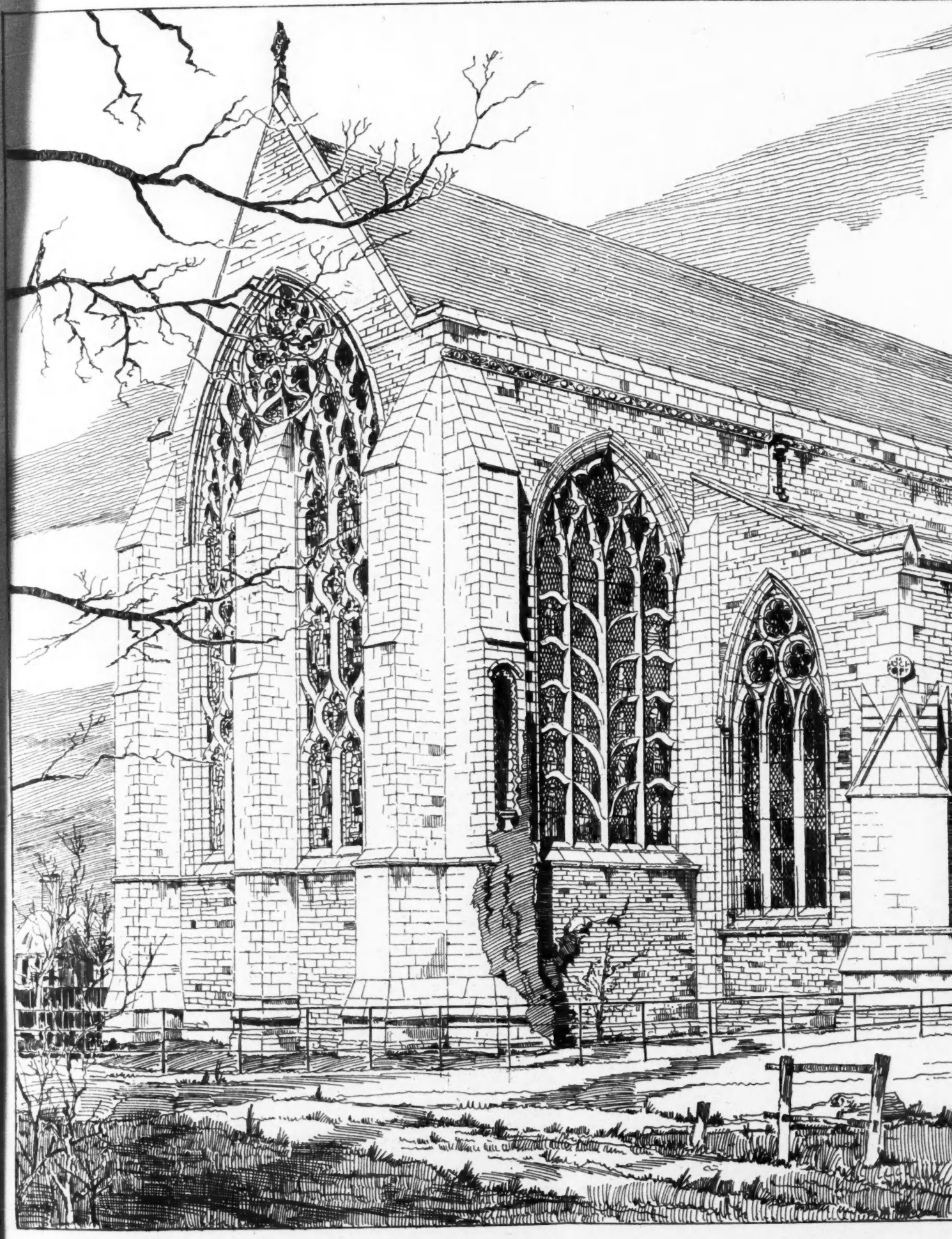


PHOTO-LITHO. SPRAGUE & Co. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

LIGHTS AND SHADOWS OF A BYGONE DAY.—Drawn by Mr. H. W. Brewer.



THE ABBEYS OF GREAT BRITAI

DRAWN BY MR. ROLAN

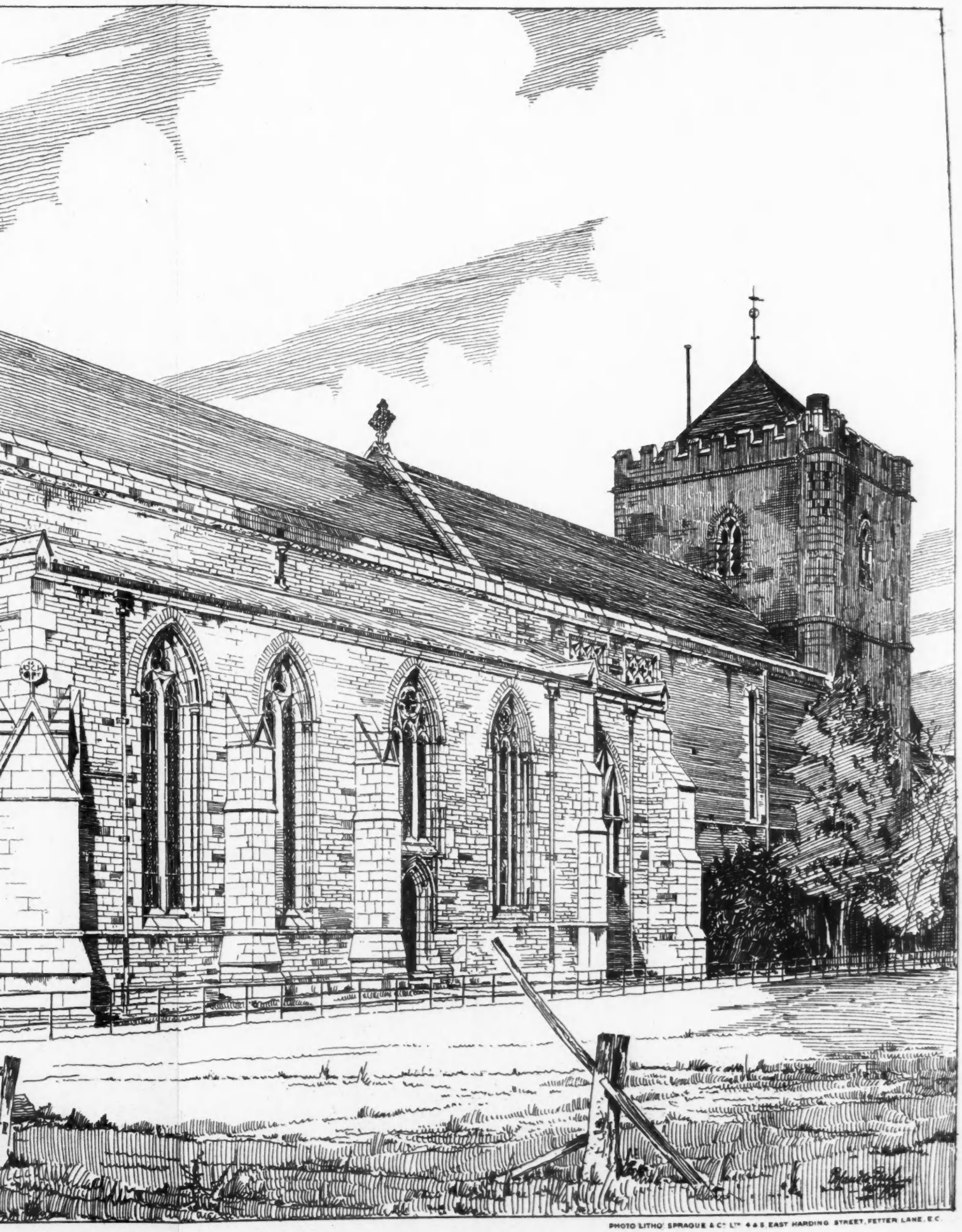


PHOTO LITHO. SPRAGUE & Co. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

BRITAIN. No. 32. DORCHESTER.

MR. ROLAND W. PAUL.

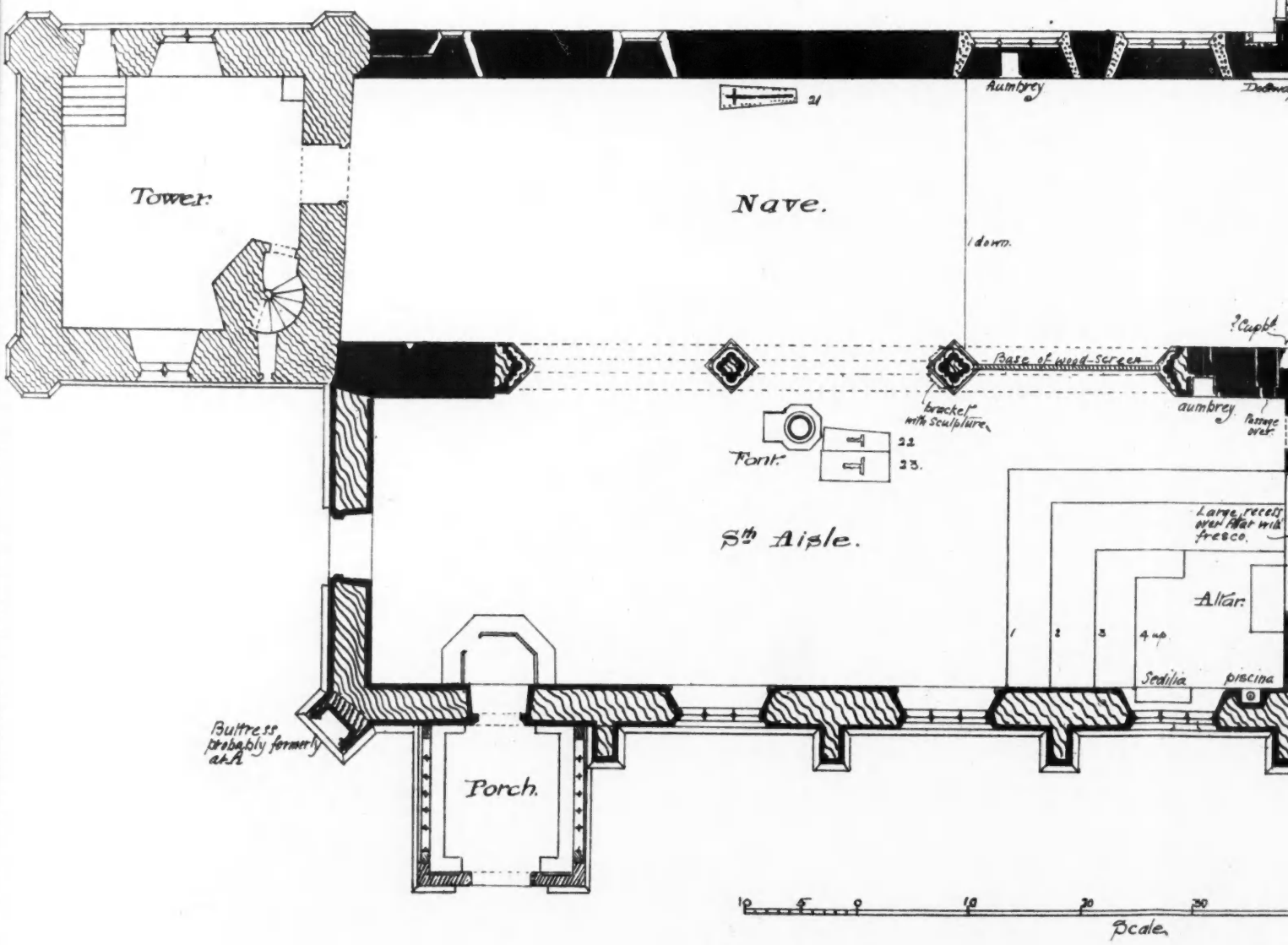
DORCHESTER ABBEY CHURCH

GROUND-PLAN.

- Norman.
- Early English
- 1st Decorated
- 2nd " "
- 3rd " "
- 4th " "
- Perpendicular.
- Post-Reformation.
- Modern.

Monuments.

1. Richard Bewfforeste – Brass.
2. Matrix of brass.
3. Slab of John de Sutton 1349.
4. Matrix of brass.
5. Stone with traces of inscription & effigy.
6. Effigy of a knight – Segrave.
7. Matrix of cross on blue slab.
8. Three shields (one only remains).
9. Cross in low relief.
10. Effigy of a knight – cross legged.
11. Matrix of brass – male effigy in part remains.
12. Matrix with merchants mark. [Drayton]
13. Matrix – Two shields remain – Drayton.
14. Effigy of Judge Stonore.
15. Brass – Benforest & wife.
16. Effigy of a Bishop [14th Century]
17. 18. 19. Matrices of brasses.
20. Slab with Traces of Lombardic letters & Cross.
21. Slab – coped, with " " " "
22. 23. Matrices of brasses.



Site & Foundations of
Nth Transept & Chapel.

Piscina

recess with flue.

3 Lockers.

Nth Aisle.

Organ here

Piscina

Doorway

Rood screen

Rood screen

Stalls.

'Crossing'
(Site of Monastic Choir.)

Presbytery.

Base of Reredos

Altar

Stalls

Piscina

Sedilia

Piscina

Screen

Screen

Altar

Aumbrey

Altar

Piscina

Piscina

?Cupbd.

Aumbrey

Passage over

Large recess over Altar with fresco.

Altar

piscina

A

Sth Aisle.

30 40 50 60 Feet.

R. Saunders Paul
Head ch. dec. 1899.

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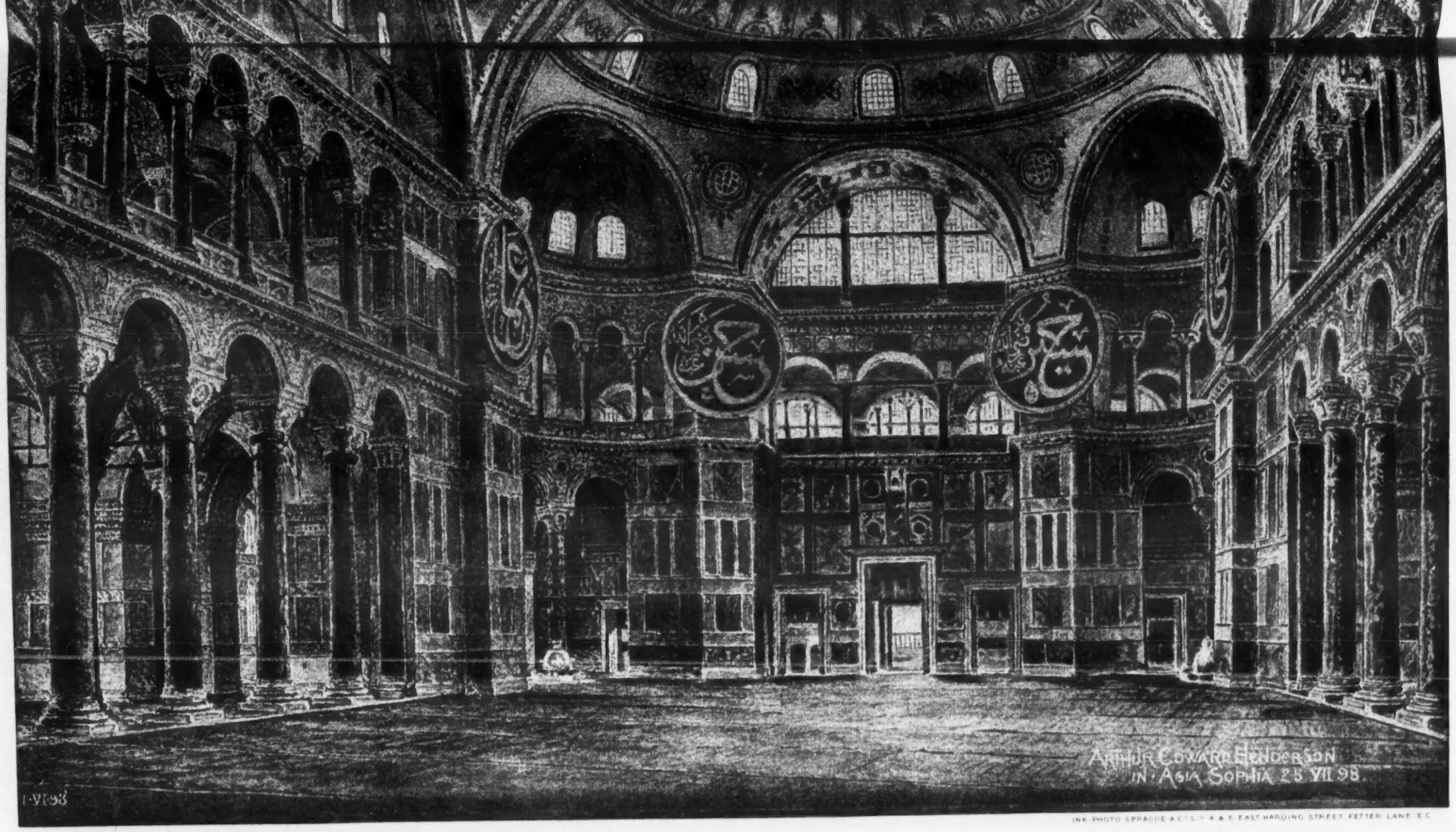
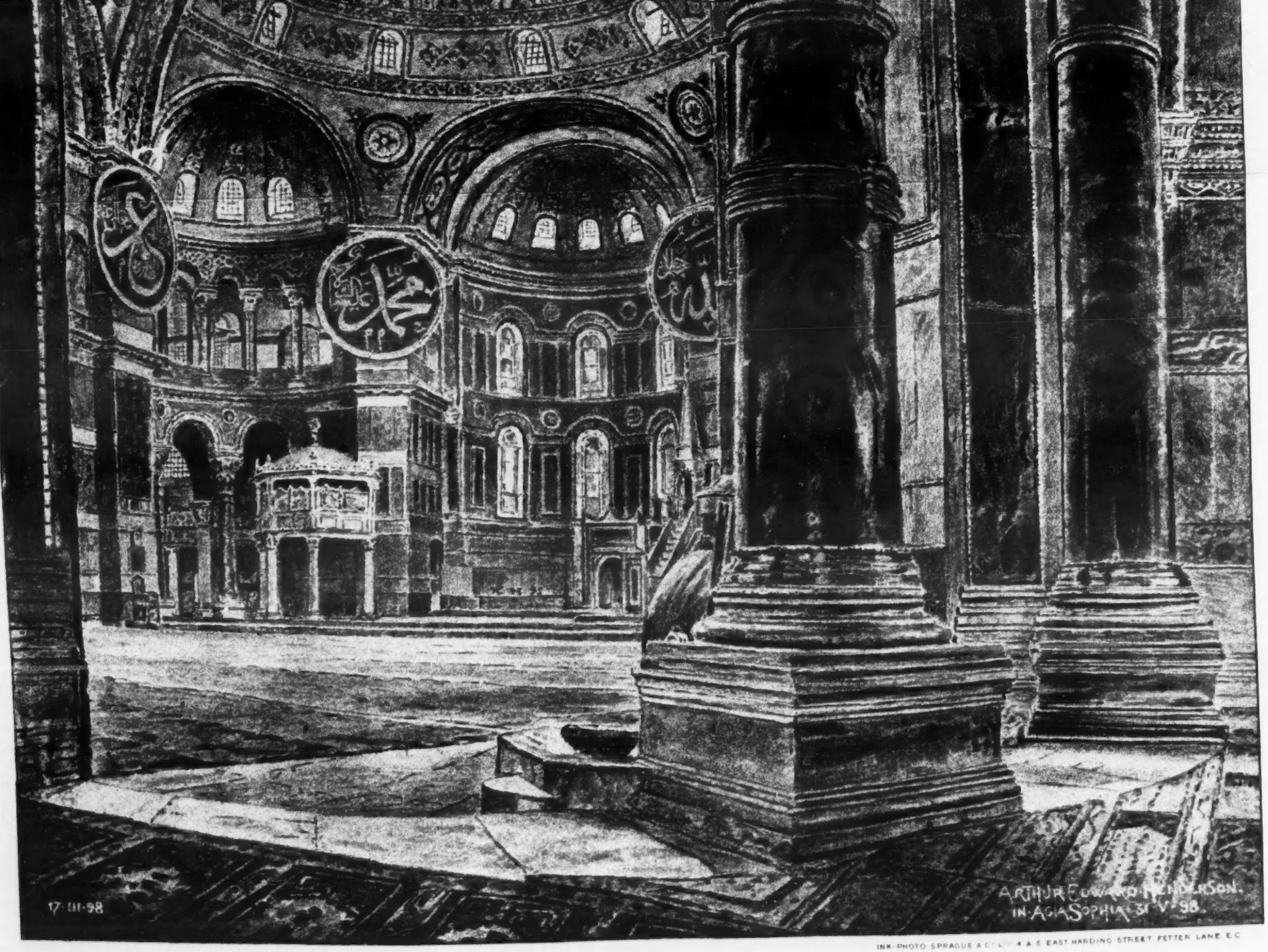
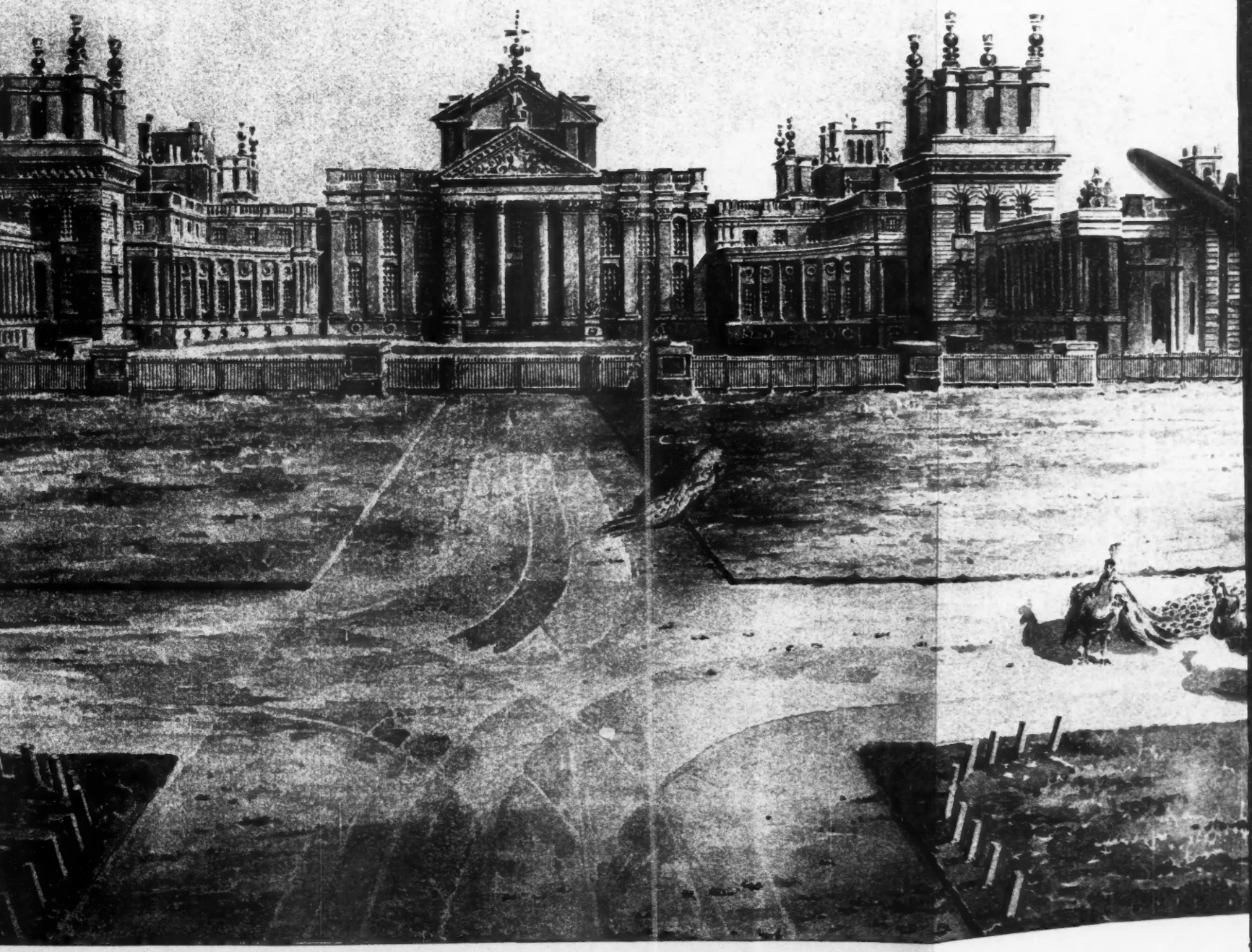


ST SOPHIA, CONSTANTINOPLE VIEW IN CENTRE OF NAVE.—From a Drawing by Mr. A. E. Henderson.

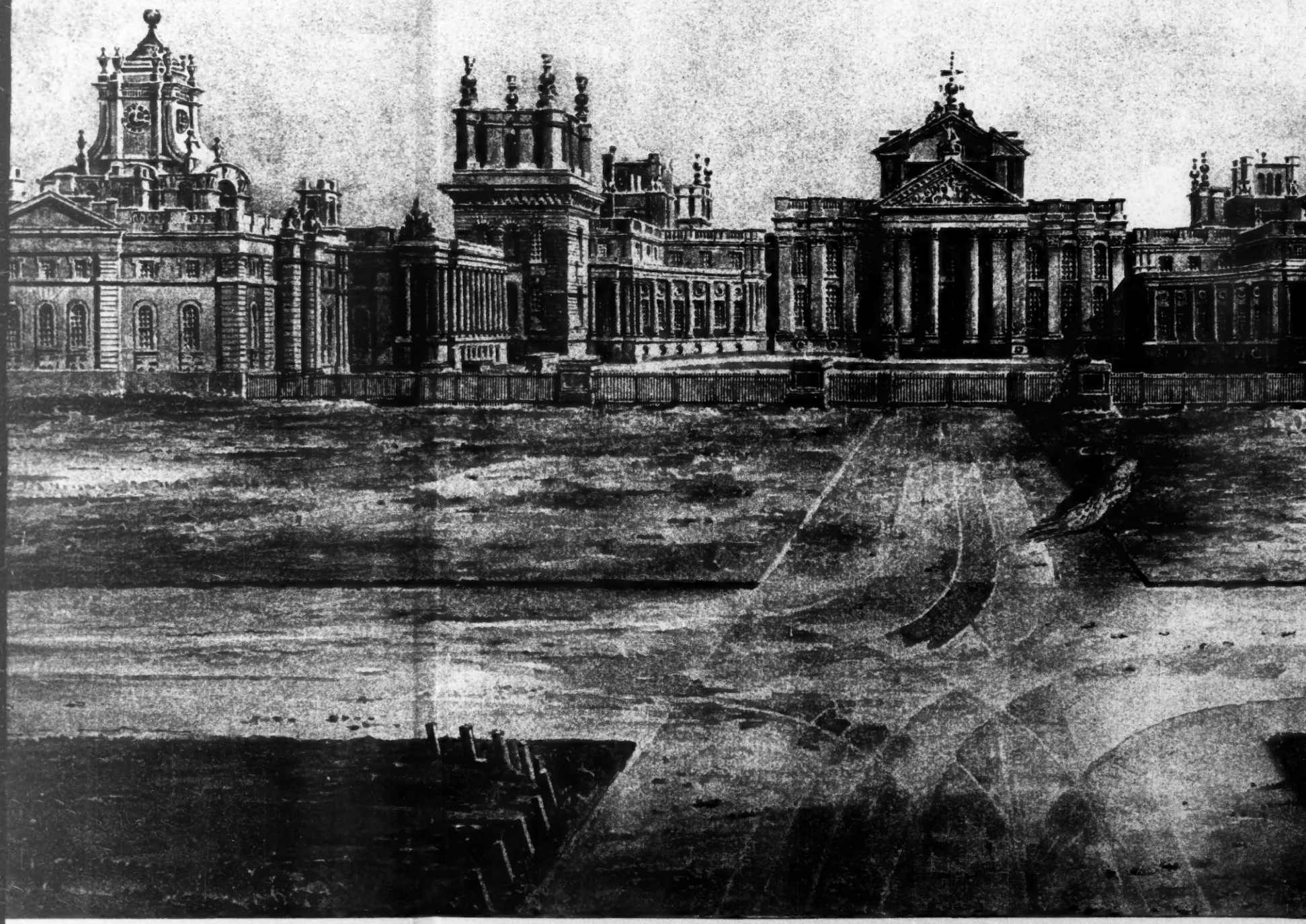


ST. SOPHIA, CONSTANTINOPLE: THE NAVE AS SEEN FROM ONE OF THE SMALLER APSES.—From a Drawing by Mr. A. E. Henderson.

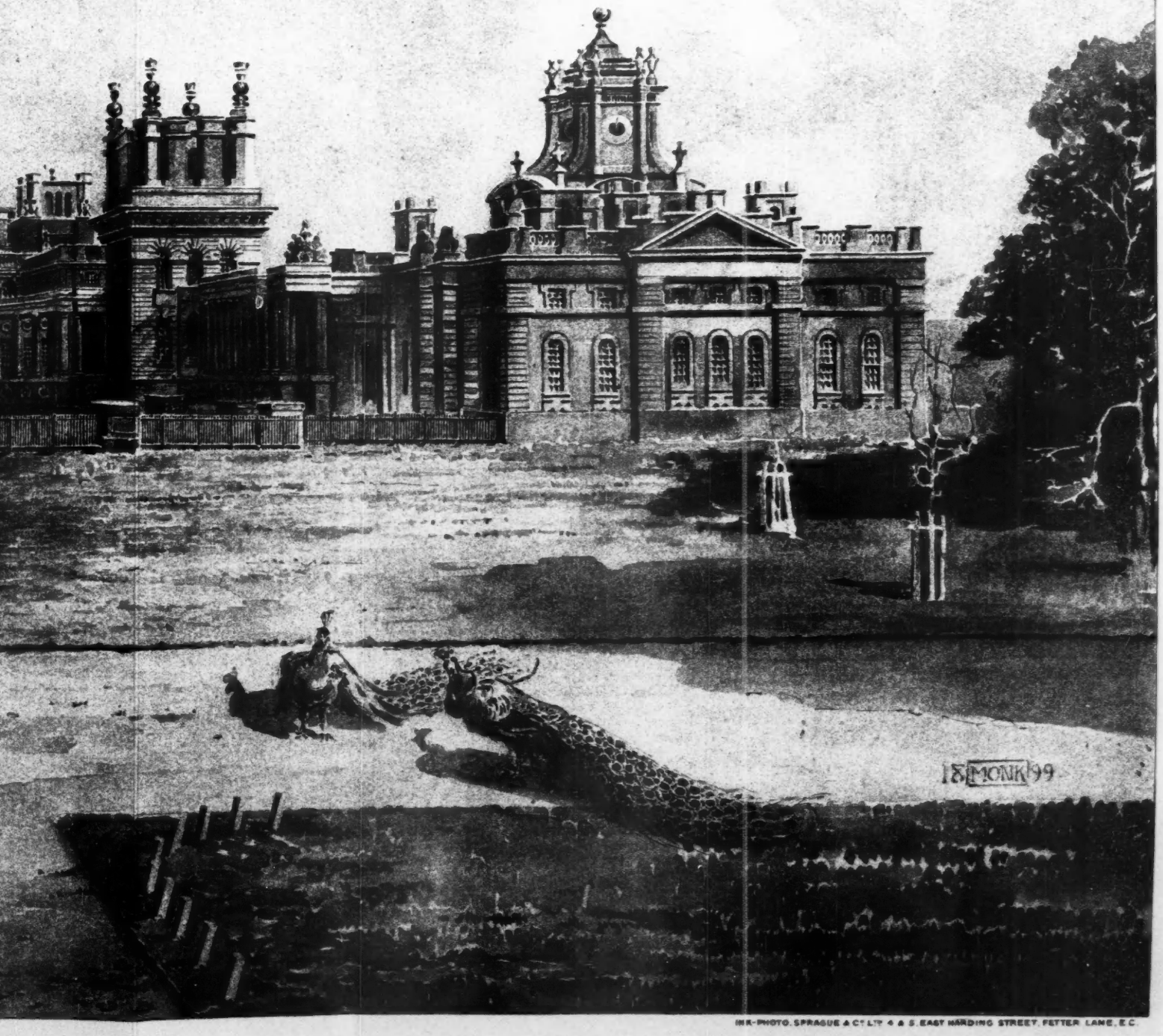
BLENI



BLENHEIM: DESIGNED BY VANBRUGH.—From a Drawing by Mr. W. Monk.



BLENHEIM: DESIGNED BY VANBRUGH.—From a Drawing by Mr. W. Monk..



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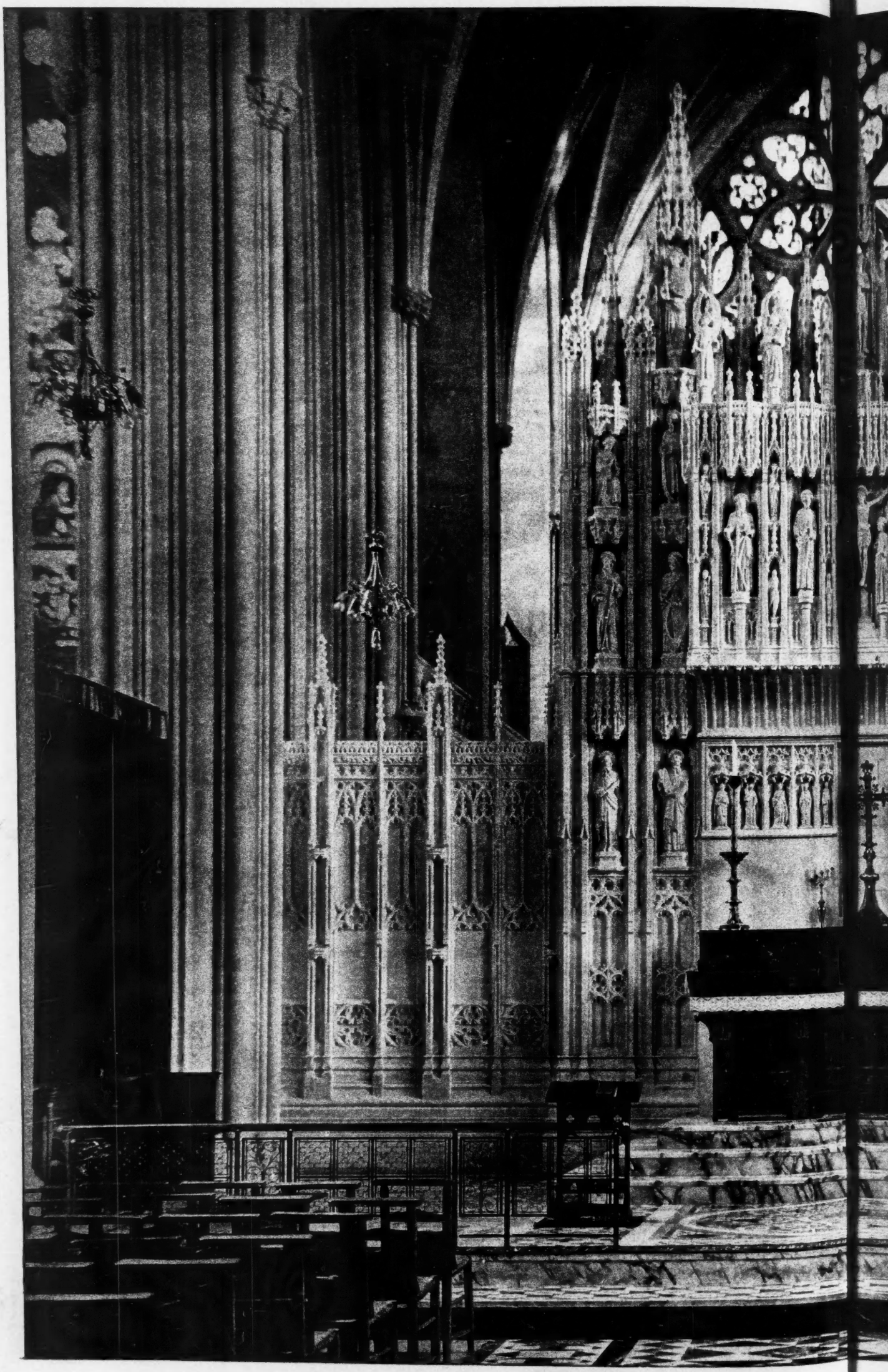
Avenue Montaigne
Paris 1898

PALACE-HOTEL
DES CHAMPS-ELYSEES
PARIS

ELYSEES PALACE

PALACE-HOTEL
DES CHAMPS-ELYSEES
PARIS

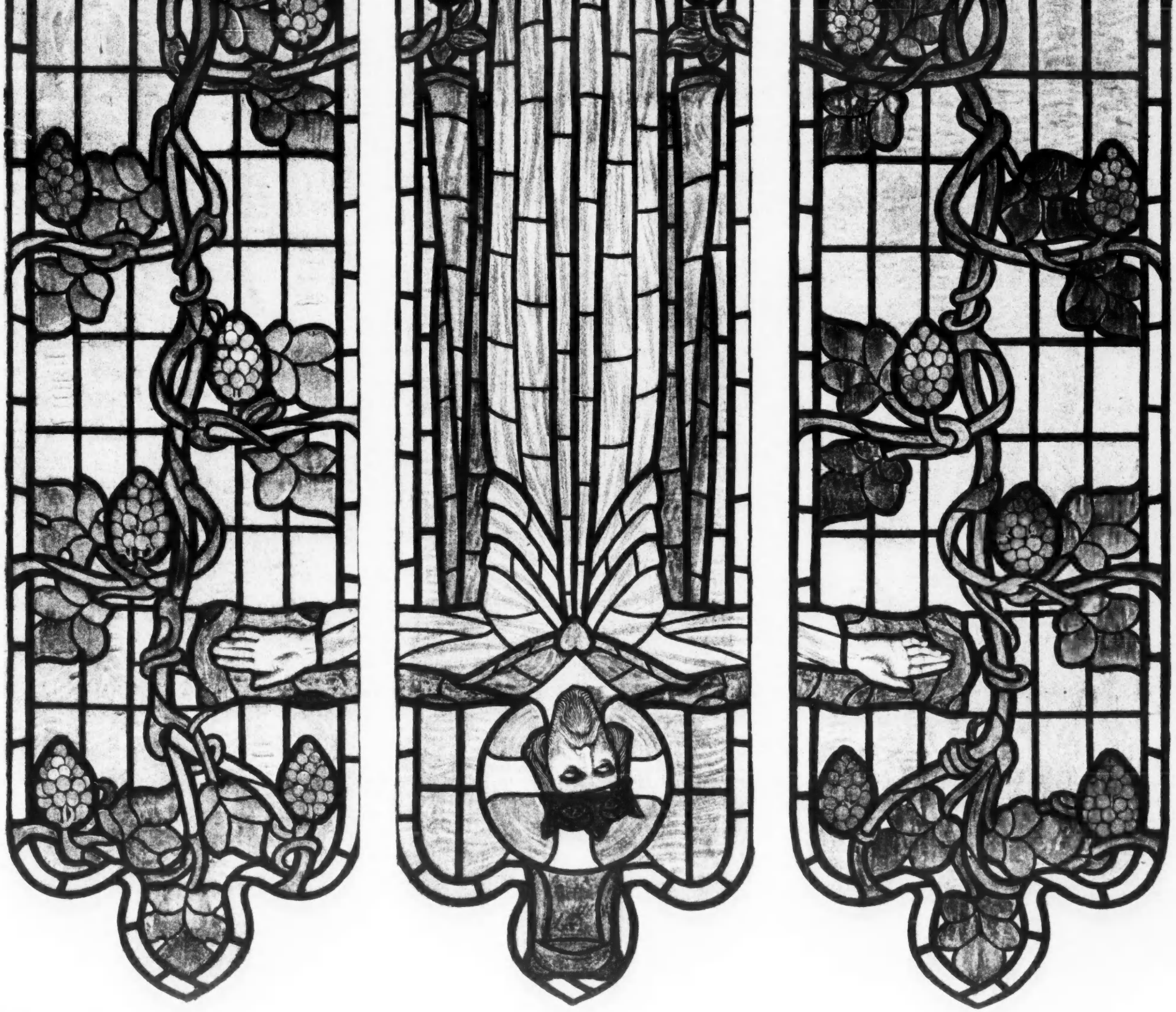
PHOTO-LITHO SPRAGUE & Cº LTD 4 & 5 EAST HARDING STREET FETTER LANE E.C.

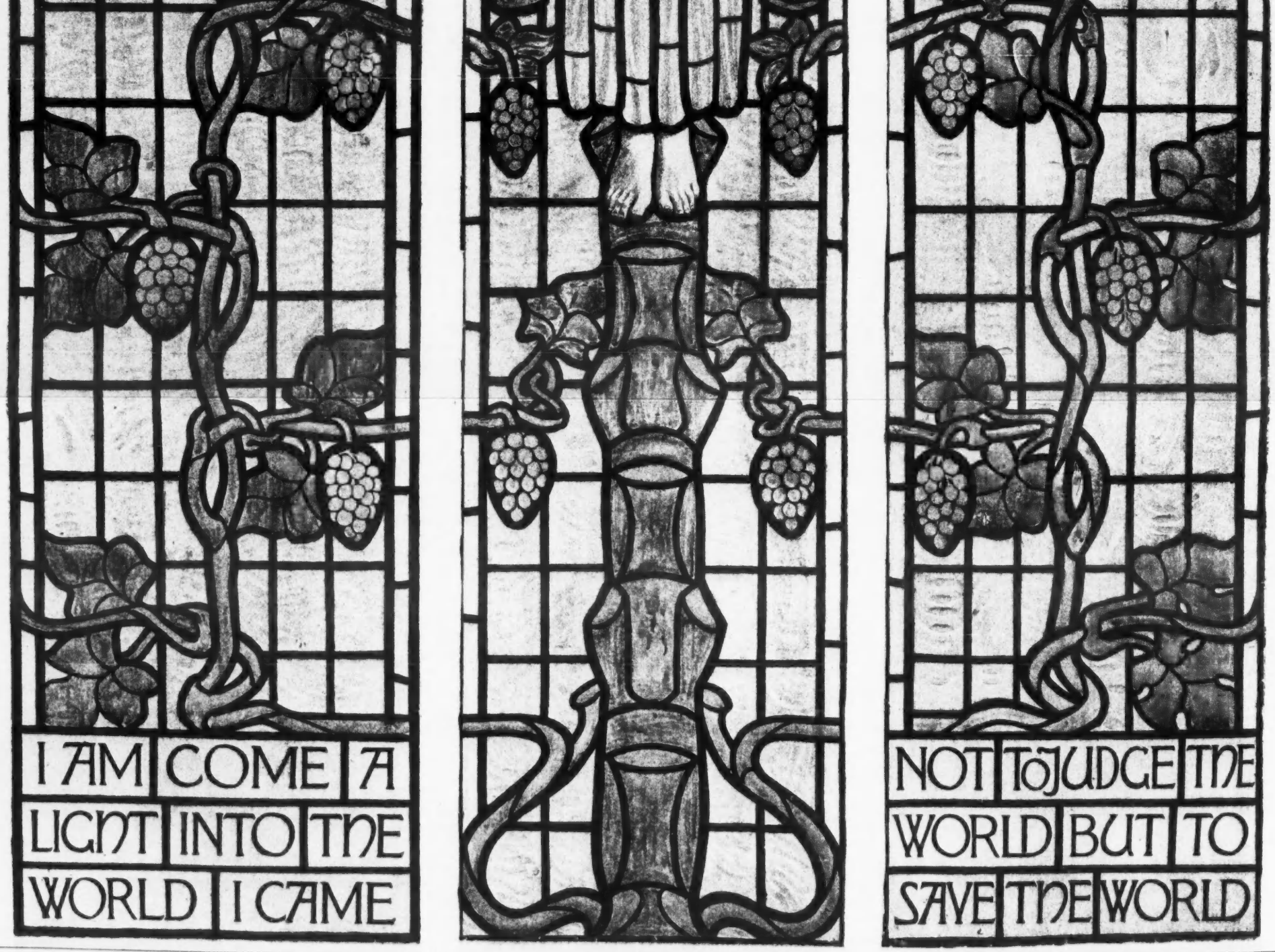


THE NEW REREDOS, BRISTOL CATHEDRAL.—T

INK-PHOTO. SPRAGUE & Co. LTD 4 & 5 EAST HARDING STREET FETTER LANE E.C.

EDRAL.—THE LATE J. L. PEARSON, R.A., ARCHITECT



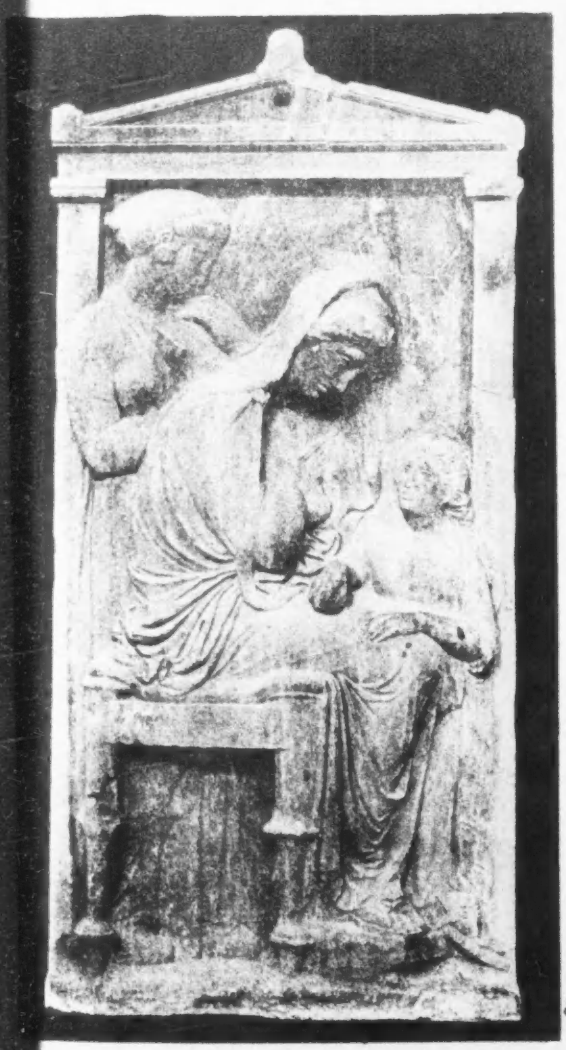


INK-PHOTO SPRAGUE & Co LTD 4 & 5 EAST HARDING STREET FETTER LANE E.C.

THREE LIGHTS OF EAST WINDOW, LONGWORTH CHURCH, BERKS.—Designed by Mr. Heywood Sumner.

1.

2.



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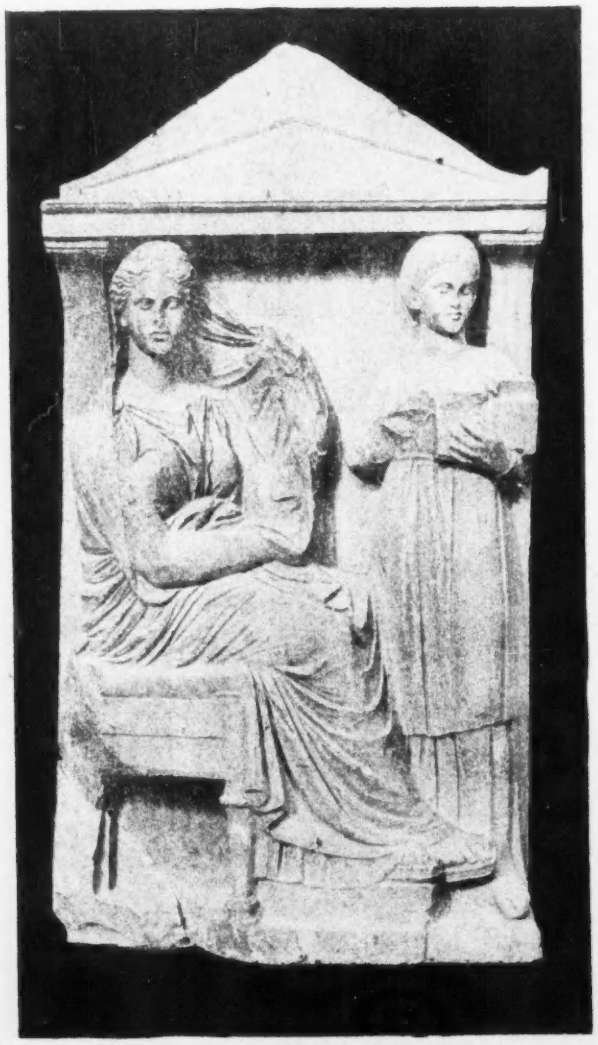
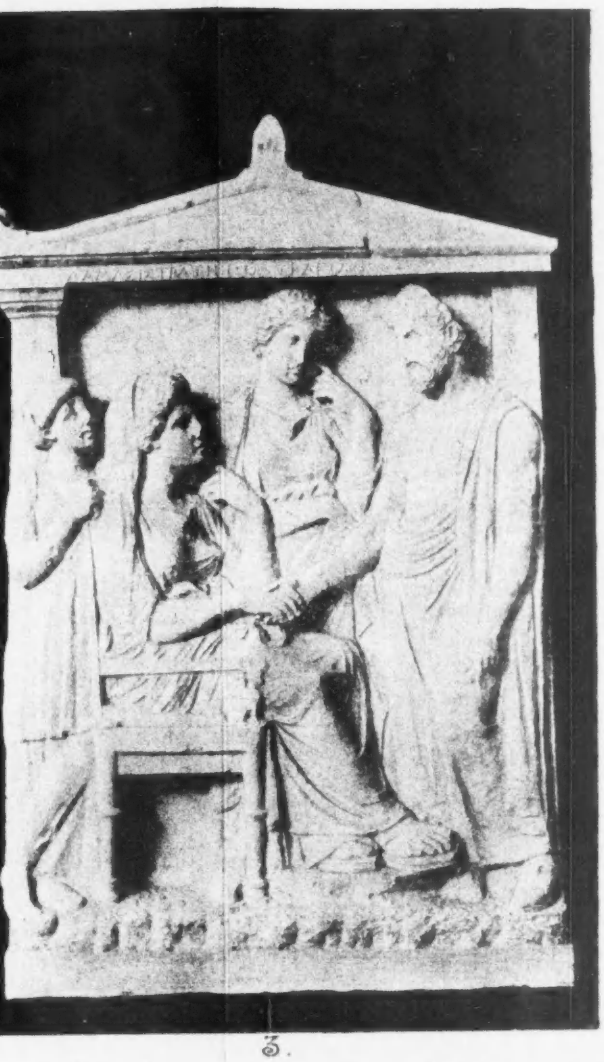


6.

EXAMPLES OF ATHENIAN GRAVE-



3.

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7.

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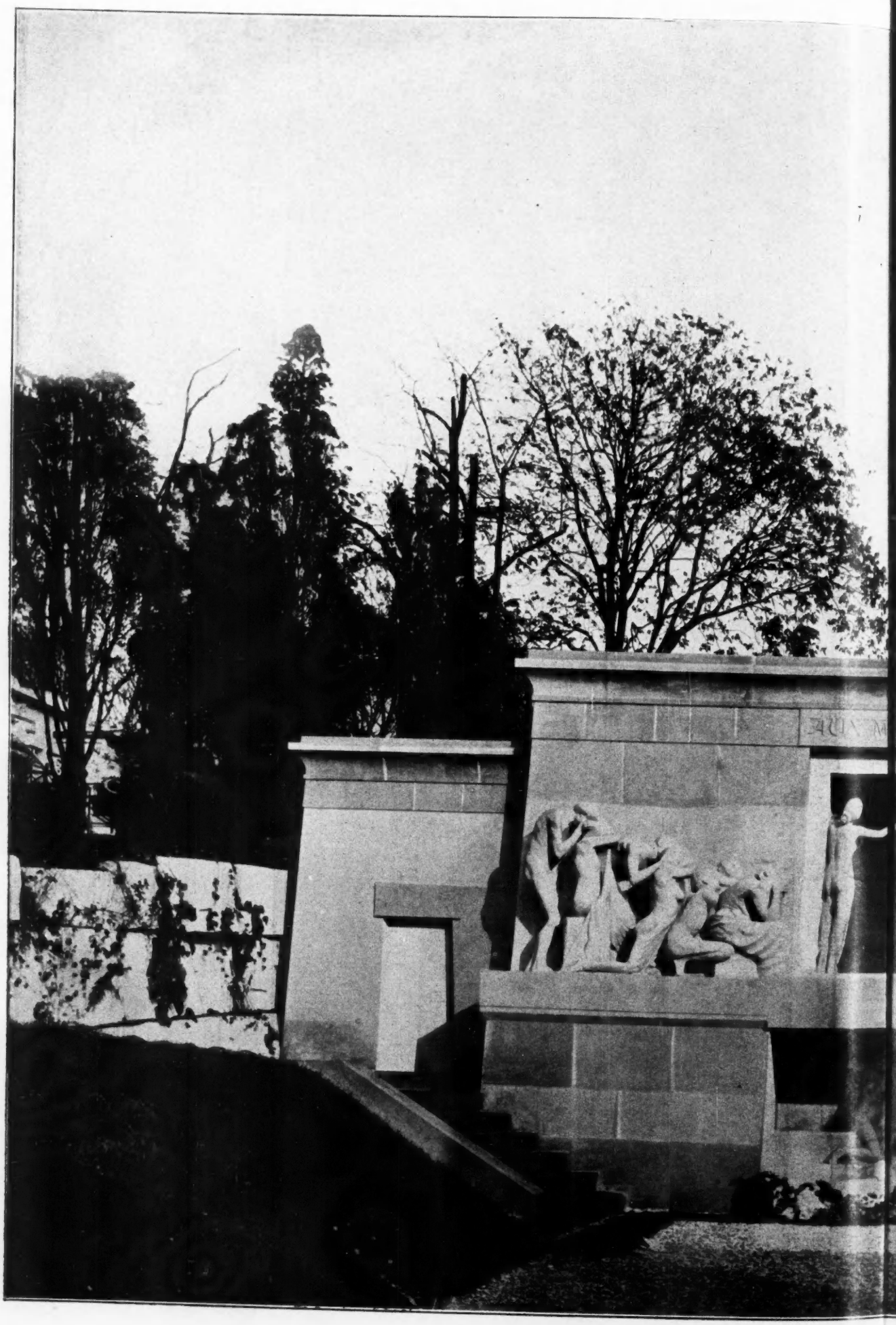
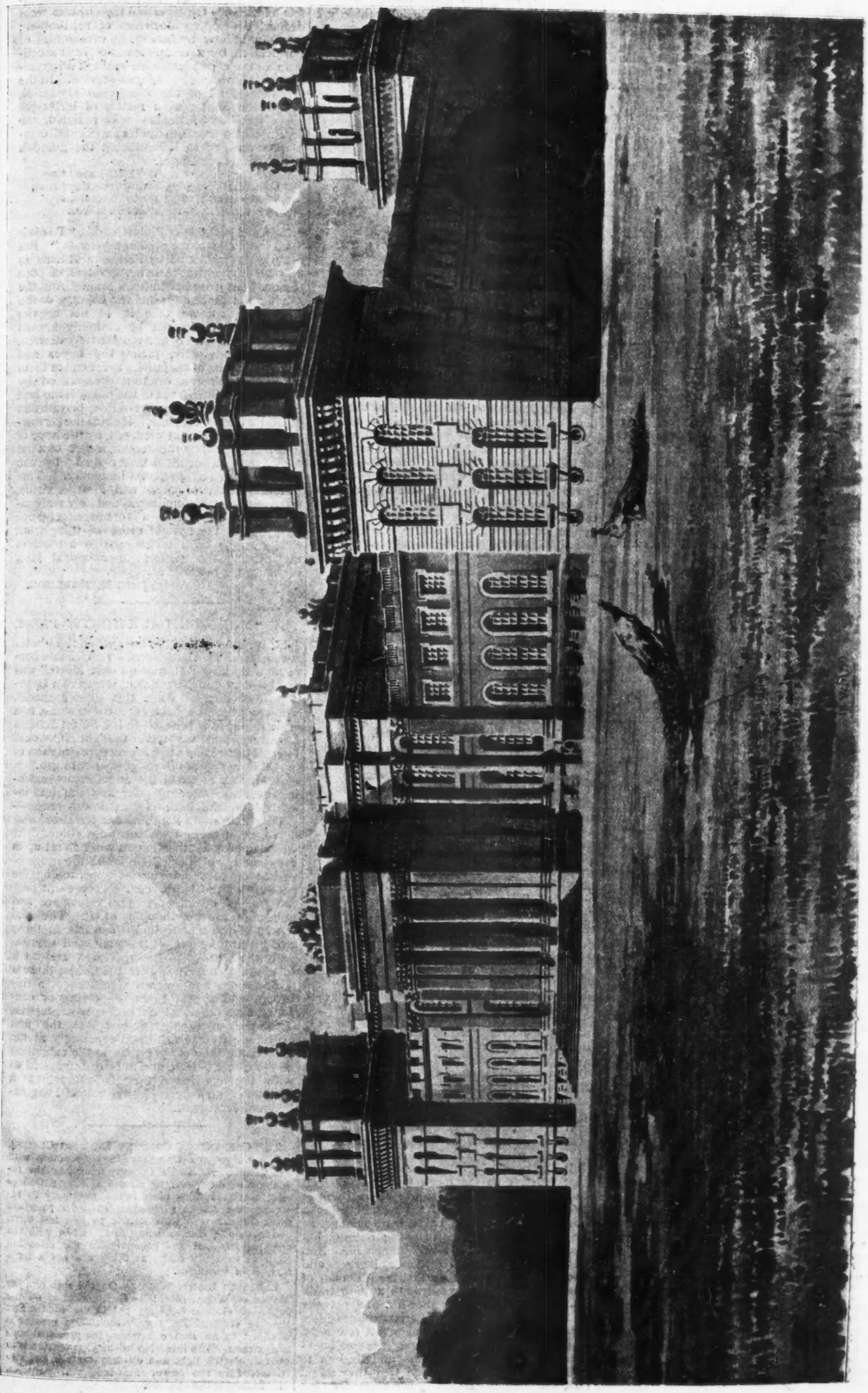


THE "MONUMENT AUX MORTS," AS NOW ERECTED IN PÈRE LA

IN PÈRE LACHAISE CEMETERY, PARIS.—M. BARTHOLOMÉ, SCULPTOR.



Bickham: Park Front. From a Drawing by Mr. H. Monk.

men of like passions with ourselves. The gods have come down to dwell with men; the Attic stonemason is nearer to us than the Pheidias of the Parthenon; and yet for all that he is a Greek, and he has succeeded just where the modern tombstone sculptor fails; he has touched us without the all but inevitable lapse into emotional squalor.

Goethe had before him but a few late and inferior specimens. The instances now known count by thousands, and are scattered throughout the museums of Europe, the main bulk, however, still naturally remaining in and near Athens, where they were chiefly found.* The examples we figure in the plate all come from Attic sources. During the early part of the present century scattered specimens came to light from time to time in sporadic excavations. In 1861 a road was made at Athens from the Place de la Concorde down to the Peiræus, and the workmen had to cut through the mound known from the dedication of the neighbouring church as the Hagia Trias. A whole row of these beautiful stelæ, still standing *in situ*, came to light. To the lasting disgrace of the engineer in charge—who shall be nameless—to avoid making a slight and easy deflection, he had them taken down and carted away, breaking many in the process. The mound in which they had lain buried for so many centuries was, it is thought, the *agger* heaped up by Sulla when he was besieging Athens. It was certainly artificial, and we probably owe the preservation of the ste'e to the chances of war. From 1861 on, public attention was roused, discoveries followed thick and fast, and the whole "Street of Tombs" in the Athenian Perameikos was systematically explored. A few monuments just outside the Dipylai gate are still left standing *in situ*; the rest are carefully housed in the great Central Museum of Athens.

The dating of these grave-reliefs is a matter of no small interest and, broadly speaking, of little difficulty. A glance at the eight specimens selected will show that they are post-Pheidian. The famous stelè of Hegeso (No. 4) is the earliest and probably belongs to the end of the fifth century B.C., or at latest the early part of the fourth. Nos. 8, 7, and 5, are a little later, so are 2, and 3, and 6, while No. 1 bears the distinct stamp of Hellenism. All, even to the latest, have something of the grand Pheidian manner. No single specimen is the work of a great artist, but all are heirs to a fine artistic tradition. George Meredith has somewhere in his trenchant way defined good breeding as an "exquisite performance on the instrument we are." These reliefs are essentially well-bred, the instrument is not genius, but all is done that a highly-trained performance can do. A curious index of their traditional impersonal character is the fact that after long looking at and living with them they are apt to weary us a little. We tire of the perfect, easy, almost mechanical manner, and long for the fresh impulse of even a rude personality.

It has been conjectured, and with every probability, that many of the earlier grave reliefs are the work of the actual stonemasons whom the completion of the Parthenon threw out of work. The adornment of Athens by Pericles drew from the islands and the Peloponnesos a throng of highly-trained workmen easily moulded to his traditions. At the close of the fifth century Athens was overtaken by disaster after disaster, the Peloponnesian war, the plague; public works ceased, and many a skilled craftsman must have been glad of work at any price. Certainly such work as that of the stele of Hegeso (No. 4) is Pheidian, even in the smallest details. The pose of the seated figure, the gracious inclination of the head, the proud full lips, the aloof air, the tinge of melancholy, all these remind us not only of the seated gods, but of the splendid young cavalry officer of the Parthenon frieze. Small details, too, like the cap of the standing figure and the characteristic drapery fold on the breast, seem like a positive echo. It was only for a few brief decades that the Greek was absolutely himself, and these are the days of Periclean Athens. To express his characteristics, then, we want Greek words, the proud words, from which Christianity, with its other standards, has taught us to shrink, μεγαλοφύχια greatness of soul, αὐτάρκεια the dignity of self-sufficingness, αἰδώς reverence for others that is three parts reverence for oneself, χάρις charm, the physical magic of personality, graciousness, that we have metamorphosed into charity—all these, the positive qualities and not merely limit, reserve, restraint, balance, go to make up what is really Greek; and it is these qualities that are as clearly imaged in the domestic art of these grave reliefs as in the marbles of the Parthenon.

The scenes represented are simple, the meaning obvious—a seated lady (No. 7); a maid brings a toilette casket to her mistress (Nos. 4, 6, and 1); a maid adjusts the sandal of her mistress (No. 8); mother and child and maid (No. 5); husband and wife join hands in token of farewell (Nos. 2 and 3). It has been often noted, with surprise, that the moment chosen is sometimes, from our point of view, trivial—the choice of a jewel (No. 4); the fastening of a sandal (No. 8). The selection of such moments is partly due, no doubt, to the artist's choice of a beautiful motive, a lovely pose or gesture, partly also to the franker attitude of the Greek mind on the question of personal adornment; they had no Puritan ancestry to set goodness as antithesis against beauty. But there is another cause for the selection of these toilette scenes—a cause that only emerges when we study archaic grave reliefs earlier by a century or more than any of those figured here. These archaic reliefs, of which there are admirable specimens in the local museum of Sparta, represent the bringing of offerings to a seated figure or figures. The seated figure represents the heroised, deified ancestor; the worshippers are his descendants. and of these early reliefs our present examples are the direct outcome—there is not a link wanting in the chain. Much of the dignity of the later reliefs is due to their long hieratic tradition. The early sculptors believed that the seated figure they represented was a divine person; hence the divine air. Long after the faith died out the dignity it had inspired remained. It has been so in nearly all great periods of art. The purely human maiden of the Renaissance artist borrowed a divine something from the traditional Madonna. It seems as though the straight discipline of orthodoxy were needed to intensify the artist's conception, to cast, as it were, the permanent mould. The Athenian sculptor of the fifth and fourth centuries B.C. meant, no doubt, to be purely human, purely naturalistic; but he is heir to this great hieratic tradition, and the heir is servant to the past. He wills to carve a dead mother, but he haunts her with the remembered semblance of a goddess seated in her great throne-like chair. A little child (No. 1) brings a pet bird to its mother; he is the counterpart of the pigmy worshipper of the Spartan stelæ offering the cock.

Some at least of the almost inhuman calm of these grave-reliefs lies in this dependence on hieratic type. It is not all balance and restraint and artistic limit; the scene of human parting is cast in the mould fashioned for the worship of a god, and is, therefore, severe. So long as this hieratic canonical type is maintained even unconsciously, we have no unseemly scenes of physical distress, no woman swooning in death, no terror-stricken maids. Once the mould broken, the restraint of hieratic convention relaxed, and, as is seen by examples which do not figure here, the Greek speedily lapsed into sensationalism.

It is indeed this reminiscence of ancestor worship that lends to these parting scenes their true pathos—a pathos almost unbearable. It is expressed too in an undertone of regret that touches us far more than any uttered lamentation. Goethe is right: "here there is no knight in harness, on his knees, awaiting a joyful resurrection." There is no evidence of hope or fear, much less of faith; nothing but the presentment of a lovely human life. And yet all archæological evidence, literary and monumental, go to prove that the Athenian of the days of Pericles was true to a long tradition of faith, faith in the after-life and potency of the dead. Homer, in his aristocratic fashion, concerned himself with the select few only, the beautiful, the well-born, the well-connected; for such there was an Elysium to which they were translated that they might not see death. Helen goes there for her beauty and Menelaus "for that he is the son-in-law of Zeus." Orpheus and the Orphics went deeper, developing doctrines of retribution; they taught how by fasting, by ceremonies of purification, by a complex and difficult asceticism a man might purge his spirit of all grossness and *became* what he *was*—divine. In the symbolic ritual of the Eleusinian Mysteries, into which almost as a matter of birthright every free-born Athenian was initiated, the ceremonies of baptism and sacramental communion ensured to the initiated the guerdon of blessedness in Hades.

> Thrice happy they
> Of mortal men who, having done these rites,
> Then pass to Hades; for to them alone
> Is given to live—for others all is woe.

So Sophocles, and later Plutarch adds, "To die is to be initiated into the greater mysteries." But the goddess fashioned by Periclean Athens in its own image was Athene, goddess of pure reason, born from her father's brain. And the Athenian of those days had the courage or the cowardice, as we take it, of his convictions; what could not be certainly known was not to be weakly and passionately desired. He chose advisedly, facing the hopes and fears and faults of his fathers to renounce them all. The funeral oration pronounced by Pericles over the graves of the fallen is the best commentary on these grave-reliefs, private and domestic though they are. He bids the sorrowing survivors be comforted, not by the hope of future glory, but by the remembrance of a life well lived, a death bravely died, by the αὐτάρκεια of a perfect humanity. This beautiful human life must end, and the virtue, the courage of rationalism is a stately resignation to the inevitable, a serene acceptance (στεργειν) of the natural order of things, but this gracious calm is haunted by a touch of melancholy, the pathos of ancestral faith renounced, a heritage foregone.

JANE E. HARRISON.

* The literature of these grave-reliefs is already a formidable one. Those who care to pursue the subject in detail can consult the great corpus of these monuments in process of publication by the Vienna Academy, "Die Attischen Grab-reliefs-herausgegeben und Aufrage der v. Akademie der Wissenschaften zu Wien, von A. Conze," and for a more popular survey, "Sculptural Tombs of Hellas," by Percy Gardner (1896). "Reliefs and Inscriptions of Athenian Tombs," *i.e.*, chapter x. of "Chapters in Greek History," by the same author; "Monuments and Mythology of Ancient Athens," section xxiv., "The Street of Tombs," J. E. Harrison; and for the art side especially, "Essays on the Art of Pheidias," C. Waldstein.

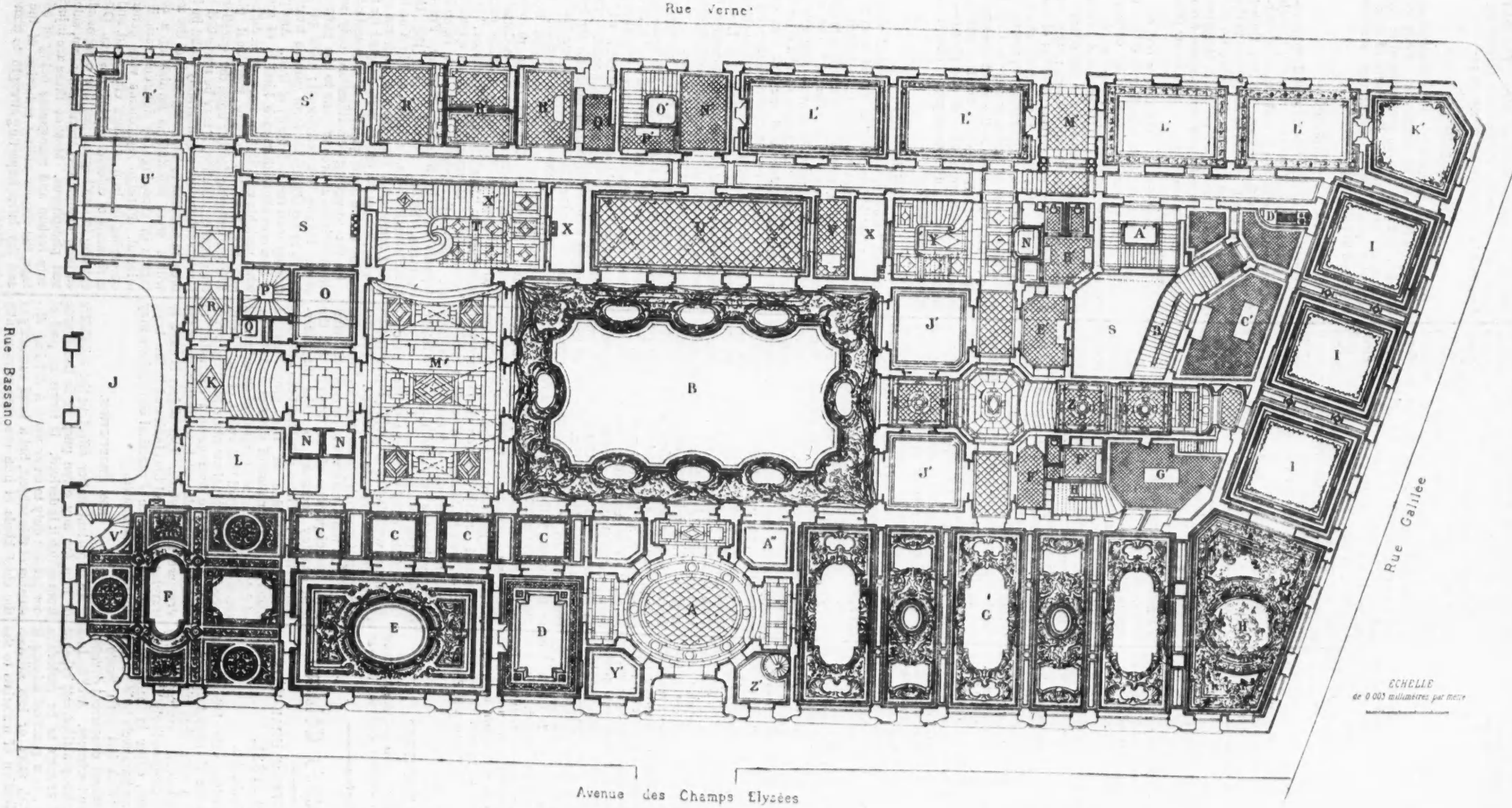
THE "MONUMENT AUX MORTS," PARIS.

SOME years ago, at the time when the plaster *maquette* of M. Bartholomé's remarkable conception entitled "Monument aux Morts" was exhibited at the New Salon, we gave a large-scale reproduction from this plaster model. The work has now been executed in stone, to a scale rather over life-size, in the Père Lachaise Cemetery, and we have thought it would interest our readers to have a representation of it as it now appears in its permanent form.

But for the figure of the angel below watching over the sleeping pair, and the text inscribed on the back of this lower recess—("They that sit in darkness and the shadow of death, upon them hath the light shined") it would appear a rather Pagan work to set up in the cemetery of a Christian land; the range of figures on each side above, approaching the opening of the tomb, seem to represent only the *fear* of death, or painful reluctance and mourning at the thought of it. The real poetry of the whole design consists in those two central figures of the man and woman, with their backs to the spectator, and as if looking into the recesses of the tomb; there is a mysterious and solemn significance in this group, who appear to be supporting or consoling each other, which is deeply impressive. This portion of the design was the first executed; it was exhibited separately at the New Salon the year previous to the exhibition of the whole design, and at once impressed us with the conviction that its author was a sculptor of no ordinary power both of imagination and execution.

THE CARPENTERS' COMPANY EVENING CLASSES.—The Carpenters' Company, in conjunction with the Council of King's College, announce the re-opening of their evening classes at King's College next week. It has been found necessary to re-arrange the classes somewhat, in order to admit those students who were unable to join last term, owing to the classes being full. Even with the changes made, it will be advisable for intending students to apply early, as there are not a large number of vacancies.

ELECTRIC LIGHT, WIGAN.—On the 20th ult., the Mayor of Wigan (Mr. J. T. Gee) switched on the supply of electric light for public use for the first time in Wigan. The supply up to the present is confined to an area comprising the principal business streets. The intention of the Corporation is to provide electric light and electric traction, and also to introduce the power for industrial purposes. Mr. Bishop is the engineer.



Ground Plan of the Palace Hotel, Champs Elysées, Paris (Reduced from a plan published in "L'Architecture.")

[See page 14.

REFERENCES.

A—Entrance Vestibule. B—Grand Hall. C—Reception Gallery. D—Morning Room. E—Reception Salon. F—Tea Room. G—Large Dining Room. H—Drawing Room. I—Table d'hôte Room. J—Covered Way. K—Passengers' Arrival Entrance. L—Luggage and Luggage Lift. M—Vestibule. N—Lifts. O—Office for Keys. P—Visitors' Servants' Staircase. Q—Visitors' Servants' Lift. R—Private Entrance. S—Courtyard. T—First Grand Staircase. U—Winter Garden. V—Theatre Agency. X—Small Courts. Y—Second Grand Staircase. Z—Picture Gallery. A'—Service Staircase. B'—Table d'hôte Office Staircase. C'—Table d'hôte Office. D'—Outlet for Kitchen Flues. E—Ladies' Cloak Room. F—Gentlemen's Cloak Room. G' Restaurant Office. H'—Staircase to Restaurant Office. I'—Musicians' Staircase. J'—Salons. K'—Salon. L'—Dining Rooms. M'—Private Entrance. N'—Service Entrance. O'—Service Staircase. P'—Manager. Q'—Hat Room. R'—Hairdressers. S'—Directors' Office. T'—Office of the Wagons-Lits Company. U'—Reception Office. V'—Staircase down to Bar. X'—Staircase down to Strong Rooms, Billiard Room, and Lavatory. Y'—Telephone Room. Z'—Porter. A''—Florist.

Correspondence.

To the Editor of THE BUILDER.

THE CLERGY AND ARTISTS' ASSOCIATION.

SIR,—A paragraph in your Notes of December 23, with regard to the above, has, owing to the Christmas holiday, only just reached me. As its representations are somewhat partisan, I feel I can trust to your continual fairness for space to put the matter from another side. The Clergy and Artists' Association has not at all "come to grief," as your paragraph suggests, but, on the contrary, is retaining and increasing its membership. The Society was formed some four years ago for the purpose of providing an office, central and accessible, by which the clergy and others might, if they wished it, be put into communication with artists direct, instead of having to go to shops. But this simple programme seemed too unambitious for a section of the members, some of whom desired to make the Association a "National Society of Church Art," whatever that might mean, and still further to create it as a missionary society for inspiring artists with certain clerical views, which the names you have published will sufficiently indicate.

I think, Sir, that you will agree that the committee of the Association were in their right in resisting an attempt to capture the society for purposes so completely outside that of its original foundation.

And I think further that your readers will have already judged from which side, whether from that of Bishops and Canons, or from that of working artists, was likely to come the dictatorial attitude which your paragraph suggests as at the bottom of our difficulties. But besides the clerical and ladies' names given, your paragraph publishes those of four artists as members of the Association just now withdrawing from it. May I, therefore, correct so far as to point out that of these four, Sir William Richmond had ceased for a year to be a member of the Association; and that Miss Rope and Mr. Holiday had not as yet made themselves regular members. It was, therefore, only Mr. A. G. Walker who had it in his power to withdraw from the Association, for reasons which he, no doubt, considers sufficient. Your paragraph is misinformed too as to what took place at the meeting at Leighton House. It was not an annual meeting, as it states, but one of special business, called to confirm certain changes of rules, which had been in discussion for six months, and on which the general views of the members had resulted in a compromise. This compromise had been accepted by a large general meeting held some weeks previously; but just before the confirmatory meeting the Committee had information that a combination, hostile to the original objects of the Association, was in a plot to swamp the general opinion of the members by setting up a permanent clerical direction of the society in the hands of the clique mentioned. The Secretary, on opening the meeting, found that there were present in the room several outsiders, who apparently intended to take part in the proceedings, and although it was a strictly business meeting, declined to withdraw. It being at a private residence, he could only adjourn the meeting. In this he was supported at once by a majority present, as he has since been by a great majority of the members. The Association has been delivered from an attempt to divert its objects, and can now return to what it trusts is a career of simple usefulness.

EDWARD S. PRIOR.

BOOKS RECEIVED.

WIMBORNE MINSTER AND CHRISTCHURCH PRIORY.—By the Rev. Thomas Perkins. (George Bell & Sons.)

The Student's Column.

DETAILS OF STRUCTURAL IRON AND STEEL.

Introduction.

EVERY succeeding year brings fresh evidence of the changes taking place in connexion with the practice of various arts and sciences. Amongst these architecture exhibits comparatively little indication of advancement, either in theory or in practice. We say comparatively little because the real progress which has been made is dwarfed by the enormous concurrent development of other arts and sciences. Architecture as a fine art was known, practised, and brought to a state of what appears to be perfection many centuries ago; as a practical science it has always provided, more or less satisfactorily, for the application of materials to the requirements of climate, to the customs of a period, and to the necessities of an occasion. Thus it is that, surrounded by the wonders of latter-day science and the opening up of new departments of engineering, the art of building seems to be almost at a standstill. Ministering, as he does, to the wants of human nature, which changes not, the architect is not called upon to exploit new wonders, and his mission is fulfilled if he present comfort, convenience, sanitation, and scientific construction in an artistic form. At the present time there is sufficient evidence to show that this mission is being accomplished, and that adaptation is being made of resources rendered available by the progress of engineering science. It is beyond the scope of these articles to discuss the general question of building construction, and inquiry will be limited to a consideration of the applicability of iron and steel to such work. Iron construction, as practised in the United States, has not hitherto been introduced into this country, and, as a matter of fact, it would not be economically possible without modification of existing building regulations. Nevertheless, very considerable use is made of both iron and steel in all classes of buildings, and it is therefore desirable that the architect should be familiar not only with the properties of the materials themselves, but also with the practical details of their manufactured forms which are suitable for adaptation to particular requirements. In dealing with some details of structural iron and steel, we do not propose to treat, unless incidentally, of either applied mechanics or constructional design, because these comprehensive subjects are supposed to be part of the ordinary educational curriculum of the architect. Our intention is rather to present, in a natural sequence, such information with regard to iron and steel work as may be readily applied in practice by those who have studied, or are studying, the art of building, but who possibly are not intimately acquainted with the details of constructional ironwork. There is every reason why the architect should be perfectly familiar with this kind of work. Strictly speaking, it comes within his province, for it is his function to conceive, in its entirety, the harmonious combination constituting the final solution of all constructive problems. At the present time, the unpaid advice of contracting engineers is too frequently relied upon by the architect, who in such a case is paid for the work he does not perform, whilst the contractor performs work for which he is not supposed to be paid. If his price does not cover remuneration for his trouble, he suffers injustice; and if it does, then the architects' client has to pay twice, which, as Euclid tersely remarks, "is absurd." The assumed position considered from an ethical standpoint cannot be regarded as satisfactory to the architect, to the client, or to the contractor. As the adoption of iron framework in buildings grows more general in this country, there will concurrently arise the necessity for increased technical knowledge on the part of the designer. In the United States, the usual practice is for a civil engineer to act in conjunction with the architect in the design and superintendence of all important metal-framed buildings. Whether a similiar condition will ultimately prevail in England probably depends very much upon the future training of the architect.

One of the chief problems of modern constructional work is that of employing materials to the greatest possible advantage. The designer must invariably ascertain to what straining actions the structure will be exposed, what is the best disposition of the material, and the least quantity necessary to resist the ascertained strains. These considerations naturally involve knowledge of the properties of materials, of the nature of stresses and strains, of data ascertained as the result of experimental research with regard to strength, of the joining together of individual members forming structures, and of the arrangement calculated to contribute most adequately to the stability of the structure as a whole. Our object is now to traverse the ground thus indicated in the hope that the inference of practical conclusions may thereby be facilitated.

IRON PRODUCTION.

An important matter affecting the suitability of iron for any given purpose is the source from which it is derived. It forms no part of our present duty to enter upon a detailed discussion of this subject, but a brief summary of the chief kinds of iron ore may conveniently be made. Iron ores are divisible into three main groups—where the metal occurs chiefly as sulphide, as carbonate, or as oxide. The chief forms of ore coming within these groups are described in the following summary:—

Class 1.—Sulphides.

Pyrites is never used for the manufacture of iron, owing to the deleterious effects of sulphur; but the residue remaining after the mineral has been burnt in the course of other industrial processes is sometimes usefully employed in puddling furnaces.

Class 2.—Carbonates.

(*a*) Spathose ore is a crystalline and comparatively pure form of ferrous carbonate, though magnesium, manganese, and calcium carbonates are usually present. In the United Kingdom the chief sources of supply are in the Weardale and the Exmoor districts; on the Continent extensive deposits occur in Germany and in Spain. Owing to its freedom from phosphorus, this ore is largely used in the production of steel.

(*b*) Clay ironstone, or argillaceous ore, consists of ferrous carbonate, mixed with clay. A variety of clay ironstone, containing carbonaceous or bituminous matter, is known as black-band ore. The former type is found in the Cleveland beds of Yorkshire, in Shropshire, Derbyshire, and in South Wales; also in France, Germany, and various districts of the United States. The latter type occurs chiefly in the coal measures of Staffordshire, Scotland, and Wales, as also in Germany and the United States. Clay ironstone is the most abundant variety of English iron ore, but it contains a somewhat large proportion of phosphorus—a metal which is disadvantageous except in minute quantities.

Class 3.—Oxides.

(*a*) Red hematite ores include several varieties, such as "kidney ore," so called from the shape of the nodules in which it is deposited; "specular ore," a crystalline form with a bright mirror-like surface; "titaniferous" ore or "ilmenite," a variety somewhat resembling specular ore; and "micaceous ore," a crystalline mineral. Kidney and specular ores are the forms chiefly used for iron manufacture, and both of them are freely distributed in Great Britain, notably in Cumberland and Lancashire. There are also considerable deposits in Sweden, Norway, Belgium, Germany, Austria, Brazil, Elba, and in the United States.

(*b*) Brown hematite varies much in appearance and in purity, and includes the following types: "limonite" and "bog-iron ore," both of earthy and concretionary nature; "gothite," a crystalline substance; and others, which need not be specifically mentioned. The principal sources of brown hematite for iron production in the United Kingdom are Northamptonshire and the adjoining counties, considerable quantities are also imported from Spain. Important deposits occur in other countries of Northern Europe, and in Canada.

(*c*) "Magnetic" iron ores include forms described as "franklinite," "loadstone," and "iron-sand." Comparatively small quantities are found in this country, but extensive deposits exist in Sweden, Norway, France, Germany, Spain, Portugal, in the Ural Mountains, in India, in Africa, and in America. Being remarkably free from phosphorus and sulphur, magnetic ore is well adapted for the making of the finest qualities of iron and steel.

In the foregoing classification only such characteristics as are germane to the purposes of our inquiry are mentioned; more precise details being obtainable from various treatises dealing with the metallurgy of iron. Analyses of iron ores show that each kind is of somewhat variable constitution, not only in different localities, but also in any individual place. Without entering further upon the question of chemical constitution, it may be remarked that foreign substances are invariably found in iron ores, in addition to the compounds of the metal which were selected as furnishing a ready means of grouping the different varieties of mineral. Foreign ingredients very generally occurring in iron ores are clay, sand, and the carbonates of calcium and magnesium. Others, existing in small quantities are compounds of carbon, manganese, arsenic, titanium, sulphur, and phosphorus. Most of these are injurious, only carbon and manganese being of advantage, the former aiding reduction of the ore and the latter imparting strength to manufactured steel.

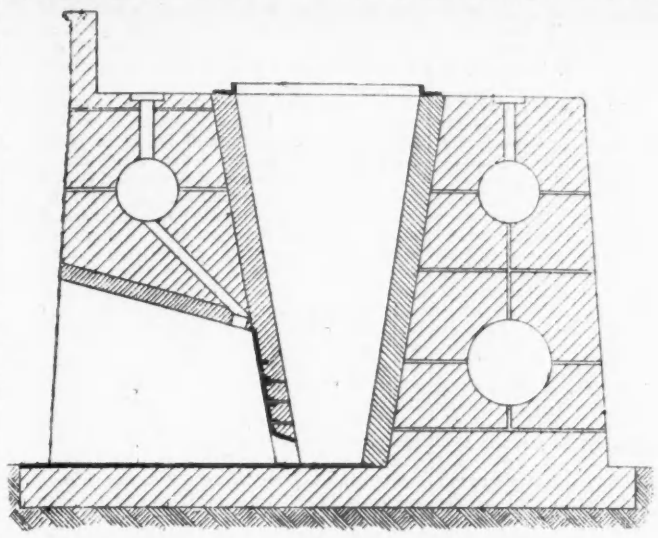


Fig. 1.—Section of Ore-roasting Furnace.

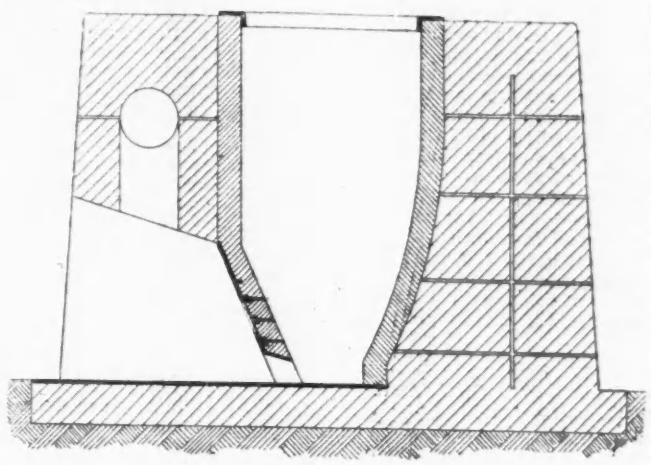


Fig. 2.—Section of Ore-roasting Furnace.

Table I.—Showing the Approximate Percentage of Iron in Ores of various Kinds.

I. Sulphide Class:—		
Iron Pyrites	Spain	41·92
	Portugal	44·28
II. Carbonate Class:—		
Spathose Ores	Weardale	38·95
	Somerset	34·67
	Germany	42·59
	France	37·45
	Nova Scotia	42·76
Clay Ironstone	Scotch Black-band	32·00
	Staffordshire	36·14
	Cleveland (Yorks.)	31·42
	Dowlais (S. Wales)	34·72
	Abercorn Black-band	36·40
	Ohio (U.S.A.)	41·89
III. Oxide Class:—		
Red Hematite Ores	Ulverston	63·66
	Elba	61·81
	Lake Superior	62·99
	Nova Scotia	43·40
	Missouri	59·15
Brown Hematite Ores	Northamptonshire	37·00
	Sweden	47·32
	Spain	45·87
	France	49·00
	Kentucky	48·95
	Nova Scotia	58·22
Magnetic Hematite Ores	Yorkshire	49·17
	Sweden	62·60
	Canada	66·73
	Wyoming	45·49
	New Jersey	64·86
	Lake Champlain	69·51

Table II.—Showing the Approximate Composition of Iron Ores used in Manufacture.

Constituents.	*Carbonate Class.*		*Oxide Class.*		
	Spathose.	Ironstone.	Red Hematite.	Brown Hematite.	Magnetic.
Ferric oxide	0·5	0·10	60·95	50·90	30·70
Ferrous ,,	20·60	30·45	0·5	—	15·55
Manganese oxide	1·25	0·2	0·2	0·2	0·1
Magnesia	0·10	1·10	0·1	0·2	0·2
Alumina	0·5	1·10	0·5	1·10	0·10
Lime	0·25	1·10	0·3	0·5	0·5
Silica	0·5	2·25	1·25	1·30	0·25
Carbon dioxide	35·40	20·35	0·2	0·5	0·5
Phosphoric anhydride	—	0·3	0·3	0·3	0·2
Sulphur	—	0·2	0·1	0·1	0·2
Water	0·5	0·4	0·5	5·20	0·5

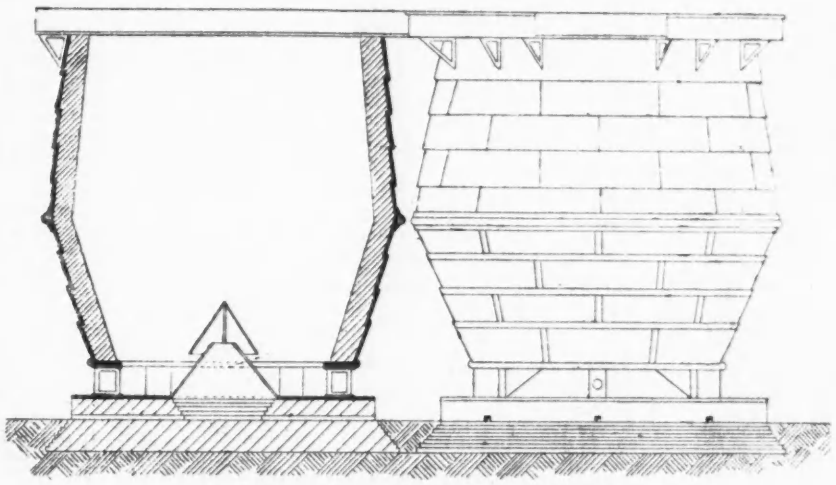


Fig. 3.—The Gyers Kiln: Section and Elevation.

IRON EXTRACTION.

Modern methods for the extraction of iron from its ores may be said to come under one of two heads:—(1) where cast-iron is produced by smelting; and (2) where malleable iron or steel is obtained directly from the ore. Preliminary preparation of the ore for smelting is always practised, in order that a maximum surface may be exposed to the action of the furnace gases, and that volatile constituents may be eliminated. The ore is first crushed in a stone-breaker or mill into fragments about 2 in. diameter; it is then mixed with suitable fuel and roasted in kilns, or in heaps exposed to the open air. In this way fragments of impure ferric oxide are obtained. Blackband contains its own fuel, and if properly stacked merely requires lighting with a small quantity of coal. The process of roasting is essential in the case of most ores, and even when the raw material consists of oxide, roasting has the effect of simplifying the subsequent operation of smelting. Roasting kilns vary considerably both as to design and dimensions. In a general way they may be likened to lime-kilns, and heat is furnished by solid fuel, by producer-gas, or by waste gas from a blast furnace. In the construction of a roasting kiln it is always desirable that sharp angles in the interior should be avoided, because combustion is always less rapid in the angles than in the centre, therefore if heat were regulated so as to produce its proper effect in the middle of the kiln, calcination would not take place in the corners. Figs. 1 and 2 are given as illustrations of two satisfactory forms of roasting kilns, and incidentally these exemplify the application of cast-iron in structural work. In each figure the kiln is built of masonry with a fire-brick lining, and the floor is made of cast-iron plates 2 in. in thickness. The average dimensions of such a furnace may be taken as 20 ft. long by 9 ft. wide at the top by 18 ft. high; a cast-iron frame is provided on the upper edge, so that the brickwork may be protected from injury during the operation of charging. This frame is about 12 in. wide, with a flange 6 in. high, and it may project either above or below the upper course of brickwork. The front of the kiln is built with two arches having openings communicating at the floor level with the interior. Through these, calcined ore can be drawn prior to being loaded into barrows for removal to the blast furnace, and above the openings four or more holes, 6 in. square, are provided, with suitable arrangements for the regulation of draught. Another type of roasting kiln is that first used at Middlesbrough, and erected from the designs of Mr. Gyers. One of these kilns in shown in fig. 3, in elevation and section. The Gyers kiln is circular in form, being built of fire-brick, about 15 in. thick, with a shell of wrought iron resting on an annular cast-iron entablature, supported by cast iron pillars, between which space is afforded for the raking-out of calcined ore and for the admission of air. Beneath the pillars is a foundation of brickwork having additional air passages communicating with the double cast-iron cone in the centre. Air is also admitted through orifices shown in the lower portion of the kiln. The central cone has the effect of spreading the calcined ore in the direction of the spaces between the pillars, and it also helps to break up any partly fused lumps which descend from the upper part of the kiln. Sometimes the annular space between the two sections of the cone serves the purpose of admitting waste gas from the blast furnace, and in any case it is available for the supply of air in aid of combustion. As a general rule the internal maximum diameter of the furnace is 20 ft., the height 21 ft., the capacity more than 5,000 cubic feet, and the cone is about 8 ft. diameter by 8 ft. high. In some works the kilns are connected together in groups of four by galleries of cast iron with wrought iron brackets, and in others they are arranged in a continuous line, above them being a tramway, by the aid of which wagons may be caused to discharge their contents directly into the kilns. Besides the forms of kiln mentioned above there are many others, but these need not be described in detail as no variation of general principle is involved.

Next in order comes the process of smelting, performed in a blast furnace, where the following changes take place. The fuel used for the purpose of reduction combines with oxygen of the air supplied, forming first carbon dioxide (CO_2), and then by the absorption of more carbon, carbon monoxide (CO). This, coming into contact with the heated iron oxide, is again converted into carbon dioxide, leaving the iron in a metallic state. With the object of aiding the separation of earthy impurities contained in the ore, and of promoting their fusion, various classes of ore are frequently mixed together, so that suitable relations may exist between compounds of silicium, calcium, and aluminium contained therein. More generally,

however, limestone, ferruginous clay, or poor ores containing aluminous compounds are added to serve the purpose of a flux. Limestone ($CaCO_3$), when subjected to heat, parts with with CO_2, leaving as the residue calcium oxide, or quick-lime (CaO). This combining with silicious compounds and other impurities in the molten iron, forms a double silicate of calcium and aluminium, really a crude type of glass, which, owing to its smaller specific gravity, rises to the surface, and when cold constitutes what is known as "iron-slag." The melted metal collects on the furnace hearth, whilst the fused slag floats on its surface. Slag is drawn off from openings in the upper part of the hearth, and the metal is run from below into channels formed in sand, each channel of iron being termed "a pig," and hence originates the expression "pig-iron."

OBITUARY.

MR. F. T. DOLLMAN.—We regret to have to record the death, at the age of 87, of Mr. Francis Thomas Dollman, whose name is well known to many of our readers. His death occured at 23, Gloucester-crescent, on December 26. Mr. Dollman was articled with Augustus Pugin, and at the age of 33 he entered the office of Mr. Geo. Basevi, with whom he remained up to the time of the death of the latter, by an accident, in Ely Cathedral. He was elected an Associate of the Institute in 1864, and Fellow in 1895, but almost immediately afterwards put his name on the "Retired Fellows" list. Mr. Dollman was, we believe, architect of the following churches—St. Matthew, Upper Clapton (1869); St. Stephen's, Haggerston (1872); St. Saviour's, Walthamstow (1874); All Saint's, Lower Clapton (1871); and (in conjunction with Mr. Allen) All Saints, Stoke Newington (1876). He also restored and enlarged St. Mary's Bromley-St. Leonard. He was, however, better known as the author of some valuable illustrative works on architecture. Among these were "Examples of Ancient Pulpits in England;" "Examples of Ancient Domestic Architecture, illustrating the Hospitals, Bede-houses, Schools, &c., of the Middle Ages in England;" "An Analysis of Ancient Domestic Architecture;" and "History and Illustrations of the Priory Church of St. Mary Overie, Southwark." We believe that he was also associated with Messrs. Bowman & Crowther in the production of their monumental work on "The Ecclesiastical Architecture of the Middle Ages." Mr. Dollman was a beautiful draughtsman, especially skilled in the production of picturesque drawings rather in the style of Prout—limed in and the effect washed in, generally in monochome. In our issue for April 4, 1885, we published a reduction of his very fine and careful drawing of the roof of Westminster Hall.

MR. J. E. GARDNER.—The death has just occurred, at the age of eighty-one, of Mr. John Edmund Gardner, formerly a lamp manufacturer in the Strand, but who for many years devoted his leisure time to the collection of prints, views, drawings, &c., illustrative of the history and topography of London. His collection is said by those acquainted with it to be one of the most valuable and interesting of the kind in existence. We understand that Mr. Birch, the curator of the Soane Museum, has been engaged in arranging it, and is also preparing an index of it.

MR. W. T. COLLINS.—We have also to record the death of Mr. W. T. Collins, senior partner of the well-known firm of Collins & Godfrey, builders, Tewkesbury and Cheltenham, which took place at his residence, near Tewkesbury, on Wednesday morning, after a brief illness. The deceased gentleman, who was eighty-one years of age, was a Justice of the Peace for the Borough of Tewkesbury and a member of the Town Council, having been first elected to that body in 1885. In 1890 he was elected Mayor, and again in the years 1892-3-4-5-6. During his mayoralty he was elected to the freedom of the Borough. He was a Freemason, being a member of St. George's Lodge, No. 900, and a member of the Trustees of the Consolidated Charities. His work in connexion with the restoration of the Abbey Church was very highly esteemed; some important portions he did, and was doing, at his own expense. Many important improvements in Tewkesbury have been entirely due to his forethought and enterprise.

GENERAL BUILDING NEWS.

CHURCH RESTORATION, CLAPHAM, YORKSHIRE.—The parish Church of St. James, Clapham, Yorkshire, was re-opened, after restoration, on the 21st ult. Mr. Curwen, of Kendal, was the architect, and Mr. Brassington, the contractor.

RE-OPENING OF ST. JOHN'S CHURCH, TROFARTH, DENBIGH.—St. John's Church, Trofarth, was re-opened recently, after having undergone extensive additions and alterations. The edifice has been enlarged by the addition of an organ chamber, vestry, and heating cell. The interior has been remodelled. The floors have been repaired, the aisle being laid with red tiles and the chancel and sacrarium with encaustic tiles. The builders were Messrs. S. Parry & Sons, Llandudno Junction, and the architects Messrs. Douglas & Minshall, of Chester.

EXTENSION OF THE KING'S SCHOOL, CANTERBURY.—New dormitories and masters' rooms are being erected at this school at a cost of about 4,000*l*. The architect is Mr. W. J. Jennings, and the builder is Mr. H. B. Wilson, both of Canterbury.

ART AND TECHNICAL SCHOOL, STOURBRIDGE.—The Stourbridge and District Technical Board propose to erect new art and technical schools in the Worcester-road, Stourbridge. Towards the cost of the schools (estimated at between 7,000*l*. and 8,000*l*.) the Stourbridge Urban Council have decided to vote 4,000*l*. At a Local Government Board inquiry, conducted by Mr. R. H. Bicknell, C.E., on the subject, the plans were exhibited by Mr. J. M. Gething, the architect.

NURSES' HOME, CITY HOSPITAL, ABERDEEN.—The new buildings erected for the use of the nurses at the City Hospital were opened on the 26th ult. Mr. John Rust, the City Architect, designed the new buildings.

BUILDING IN BELFAST.—Within recent years the number of new streets constructed and houses erected has been very large, and there are not wanting those who hold that too much has been done in the way of providing new dwellings, with the result that vacant houses in some parts of the city are undesirably numerous. Be that as it may, this class of work is still going on, and during the past year our builders und contractors have been by no means idle. The chief work of this description is, of course, the building of the new City Hall, and it is gratifying to report that, in spite of various difficulties, the contractors, Messrs. H. & J. Martin, Limited, are making good headway. The year which has just passed saw the completion of the block known as the Scottish Provident Buildings, at the corner of Donegall-square West and Wellington-place. The Scottish Provident Institution intend to continue this block further along Donegall-square West, and workmen have just commenced to pull down some of the buildings now standing on that property. At the other side of the square, at the Chichester-street corner, the Ocean Accident and Guarantee Company, Limited, intend to erect a block. Messrs. Anderson & M'Aulay have completed their new establishment in Donegall-place during 1899, and progress has been made with the reconstruction of the Bank Buildings, in Castle-place, for Messrs. Robertson, Ledlie, Ferguson, & Co., Limited. It is probable that the two chief undertakings entered upon during 1900 will be the erection of the Royal Victoria Hospital and the Technical Institution, the former will cost not less than 70,000*l*., and the latter close on 60,000*l*. The past year has been most successful so far as local plumbing firms are concerned. The unprecedented prosperity is chiefly to be attributed to the enforcement of the new sanitary by-laws passed by the Council of the County Borough, and the erection of numerous residences in the suburban districts since the extension of the city boundary. The profits, however, have proved comparatively small, as all classes of material early in the year considerably advanced in price, and wages increased in proportion to the demand for competent fitters and attendants.—*Belfast News Letter.*

BUILDING IN BRADFORD.—The building trade in Bradford has shown greater activity during the past year. The most prominent feature is the large increase in dwelling-houses that have been erected, the total of which has not been exceeded since 1873. The plans for this class numbered 1,216, as against 1,146 in 1898. The plans approved for warehouses and mills only total eleven, as against thirty-four in 1897. Lock-up shops were largely in excess of those erected in 1898.

BUILDING IN BRISTOL.—During the past year the building trade has, says the *Bristol Mercury*, come in for its share of the general prosperity of the city and the county, but owing to the many troubles which have arisen with regard to labour, and the difficulty in obtaining materials even at the increased cost, the additional profits which should have accrued to the builders have been conspicuous by their absence. The prospects, however, for the new year are good, and if the employers are only wise enough to maintain their prices, they should be able in that time to make up for the past. The cost of production has gone up some 15 to 20 per cent., and contract rates have increased accordingly. This, although causing many people to defer commencing building operations, should be ultimately beneficial to the building trade, many contracts during the last few years having been taken below or at practically cost price. Very little ecclesiastical work has been carried on. Only one church of importance, namely, All Hallows at Easton, has been taken in hand, whilst two small mission churches and an episcopal residence for the Bishop have been commenced. Progress has been made with the restoration work at the Cathedral, which is now rapidly drawing to completion. The improvements in Wine-street have been finished by the erection of shops at the top of the Pithay, and on the corner of Union-street. A library for Bristol North in Cheltenham-road, additions to the Council House in the form of a new rates office in Broad-street, and a new fire-station at St. George's are the only public buildings which have been taken in hand. There has been an increase in the quantity of School Board work, several large schools in the extended boundaries of the city having been commenced. Extensive additions have been made to the establishments of Messrs. J. S. Fry & Sons, Charles Wills & Son, E. & A. Robinson, and W. D. & H. O. Wills, the large factory for the latter firm at Ashton-gate having been nearly completed, whilst several buildings of lesser importance have been erected.

BUILDING IN DUNDEE.—The activity in Dundee building trade, so pronounced in 1898 has been fully maintained during 1899. It has been confined to no particular department, but, if there has been one particular direction in which it has been more manifest than another, it has been in the erection of tenement buildings for the accommodation of the working classes. These, for the most part, consist of two and three roomed houses, many of them being provided with scullery and bath-room. The localities in which they have been erected are widely distributed throughout the city, but in general they are grouped along the tramway routes or in those districts likely to be developed by forthcoming extensions of the system. While the bulk of such property has come into existence as a bonâ-fide investment, the speculative element has not been wanting. Present indications point to the conclusion that the needs of the city population in respect of dwelling-houses have been fully met for some years to come. Wages in all branches of the building trade have ruled high. Regarding the outlook for the ensuing twelve months, the prospects are such as to warrant the belief that the high-water mark has been reached, and that there will be an easing off of the pressure which has been steadily maintained for the past eighteen months. On the other hand, the work which will be undertaken by the Corporation, representing a sum of about 300,000*l*., will form a fruitful source of employment for some time to come. Among the more important contracts for the Town Council may be mentioned the enlargement of King's Cross Hospital, a commencement which is about to be made. Then there are district wash-houses and baths for Lochee, and arrangements are also in progress for providing district wash-houses for the eastern and upper eastern parts of the city. A large addition to the slaughter-house and Dead Meat Market is in course of erection. The extension of the electric light station, the building of the central fire station, the reconstruction of the gas works, the Esplanade extension, and the laying down of the new tramways are other Corporation contracts in progress or likely to be undertaken during the ensuing year. Another noteworthy department of municipal work will consist in the demolition of certain properties in Seagate to meet the requirements of tramway extension in that neighbourhood. The properties to be acqnired represent a sum of about 30,000*l*.

BUILDING TRADES, GLASGOW.—The various trades connected with the building industry have had another prosperous year. In some of these demands for increases of wages had to be granted, so that wages in these trades were never higher than at present, or building materials more costly. The valuation of the linings granted by Glasgow Dean of Guild Court during the year exceeds that of the previous year by over 150,000*l*. But whilst there is an increase of over that amount in the valuation of linings granted altogether, there is a decrease in the value of the linings for dwelling-house property of over 256,000*l*., a fourth less than the value of these for the previous year. For the three years preceding the present year the value of linings granted for dwelling-house property exceeded in amount the value of those granted for all other purposes, but this year the value of those for that class of property is little more than a third of the gross value. The increase in the gross value is largely due to exceptional circumstances, which can scarcely be considered as giving any indication of an increased demand for property for business purposes. There are the Exhibition Buildings, the electric power stations of the Corporation, and other buildings of a similar nature, and if the value of these was deducted from the gross, the position of matters would be entirely changed. Notwithstanding, these and the railway extensions in progress and other works contemplated should keep those engaged in the building trades well employed for some time.

BUILDING IN HALIFAX.—Trade has been brisk during the year, though much inconvenience has been caused by the strike of joiners, which still continues. Large public buildings are in course of erection, including the new workhouse infirmary, public hall, and police station and court house. Contracts for a large board school at Sunnyside have recently been let. There has been a fair amount of speculative building, and for private investment. In some cases the supply of labour has not been equal to the demand.

BUILDING IN HUDDERSFIELD.—Builders in Huddersfield have, says the *Yorkshire Post*, had as much work as they could get through. Few new houses have been erected, but there has been a great deal of work done in the putting up of public buildings. Trade was considerably dislocated for some months by the plasterers' strike and the lock-out of 25 per cent. of the men in other trades for

five or six weeks, and also by the local strike of joiners, who obtained an increase of wages. There are good prospects for the present year, as it is expected the building of a new theatre in Northumberland-street, the erection of new buildings by the Huddersfield Co-operative Society on the site of the Victoria Temperance Hall in Buxton-road, and of a new hall by the Huddersfield Temperance Society will be proceeded with. Several contractors have had large works on hand in other towns, and are now considering whether they shall tender for the Wakefield Cathedral extension, but they are hampered by the refusal of the Operative Masons' Society to allow stone to be worked in Huddersfield and sent out to other towns in Yorkshire (which checks the quarry trade), though large quantities are sent to London without objection by the trades union there.

BUILDING IN LEEDS.—The building trade has not been so active by a long way during the year as those interested could have wished. The trouble between employer and employed which marked the early months, especially in the plastering trade, affected Leeds, of course, in common with the rest of the country; while the local dispute in connexion with one section of the bricklayers tended still further to temporarily paralyse what should, and would, have been a brisk industry. It is comparatively recently that work can be said to have got again into full swing, and even yet some big jobs are standing, as some have already stood, because of that litigious obstruction—ancient lights. Injunctions have been obtained in certain cases, to the confusion of builders and the annoyance of architects. Both builders and architects will, it is thought, require, in future, some protection against the consequent loss through delay and the payment of interest on money which for the time being is yielding no return. It is pleasanter to turn to the relations now existing between labour and capital in the trade as compared with a year ago, and to note that for twelve months to come, at any rate, no serious dispute is likely to arise. During the year the Hotel Metropole has been completed by Messrs. Armitage & Hodgson, who have also just finished the shops and theatre on the Empire Palace estate. The Standard Assurance Company's building at the corner of Park Row is rapidly approaching completion; while among other works which have been finished during the year have been the premises of the Yorkshire Banking Company in Boar-lane, and the new offices of the Leeds Provincial Building Society in Albion-street. The new Meat Market, new baths in Hunslet and Meanwood-road, and alterations to the baths in Cookridge-street, as well as the extension of the Kirkgate Market (which is still being carried on), have been the principal undertakings of the Corporation. Various extensions have been completed at the Yorkshire College. Messrs. W. Nicholson & Son have finished the improvements and alterations at Leeds New Station, while among the larger contracts of Messrs. Thompson & Son have been the new laundry and extensions at Leeds Union Workhouse, and the new clothing factory for Messrs. Bainbridge & Son, in Park-lane. New imbecile wards have been built at the workhouse by Mr. Airey, and there were opened during the year the Yorkshire Pure Ice Company's cold storage premises in New York-street. Messrs. Craven & Umpleby have almost completed a block of offices in East-parade, and are also erecting a branch office for the London City and Midland Bank at the junction of North-street and Meanwood-road. The new premises built for Messrs. Harding, Richardson, Rhodes, & Co., in Holbech, have been an important addition to the industrial structures of this part of the city. Mr. Charles Myers is at present building new offices for the overseers in East-parade. The erection of a new "Bull and Mouth" hotel in Briggate, together with a block of shops, a work involving the expenditure of some 80,000*l.*, will be the principal addition in the immediate future to the architectural adornment of the east side of Briggate. It is calculated that what with this and the plans of the Leeds Estates Company, some 250 shops are to be built in and about this thoroughfare. The new Masonic Hall, in Great George-street, and branch premises in Kirkgate for the Yorkshire Penny Bank, are other jobs soon to be commenced; while among the undertakings of the Leeds School Board is the Higher Grade School to be erected in Dewsbury-road. The building of the pupil-teacher's college in Great George-street has already commenced. Yet another building that will be erected during the year is the new Congregational Church in Woodhouse-lane, in place of East-parade Chapel. Houses of all kinds are likely to be built in increasing numbers; the city is spreading rapidly in every direction. The number of houses completed up to the end of March last was 2,903, as against 2,400 for the previous twelve months; the number of other premises 1,266, as against 1,289.—*Leeds Mercury.*

BUILDING, &C., IN LEICESTER.—The total value of the sewering work completed during the year in Leicester is not far short of 20,000*l.* A number of sewer ventilating shafts have been erected in various parts of the town. In some instances these have been fixed in order to abate nuisances from surface grids; in others, to comply with the resolution of the Council not to allow any more surface grids to be fixed for sewer-ventilation purposes. Carriageway paving works and causeways have been carried out in various parts of the town. Six and a half miles of new streets have been sewered and completed, and eight and a half miles more are now in course of construction. Seventeen streets, a length of two miles, have been repaired under the 150th Section Public Health Act Notices. Thirty others, of the length of 3¾ miles, have been adopted as highways repairable by the inhabitants at large. The lock-out in the building trade has not affected the number of plans passed for new buildings to any serious extent. The following are the figures for 1899:—New houses, 2,905; alterations and additions, 894; shop fronts, 232; sheds, &c., 163; warehouses and factories, 87; special buildings, 36; new streets, 39. During the year about 40,000 tons of household refuse have been burnt at the three destructors, and nearly 1,500 pails converted into water-closets. Exhaustive tests have been applied to the experimental bacteria beds at the sewage farm, and the Borough Engineer, Mr. Mawbey, is now engaged upon his report thereon. Considerable progress has also been made with the Belgrave sewerage and sewage-disposal scheme. The working class dwellings in Winifred-street are in course of construction by Messrs. Hutchinson, under the supervision of Mr. Fosbrooke. The Evington Police Station and Fire station have been finished. The isolation hospital, since the termination of the lock-out, has made good progress in the hands of Mr. J. E. Johnson, under the supervision of the architects, Messrs. Blackwell & Thomson. The cemetery works at the Gilroes have been commenced by Messrs. Riddett & Son, under the direction of Messrs. Goddard & Co., architects. The Borough Asylum extension is progessing rapidly under Mr. Hine, of London, as the architect. The roads, &c., at the New Parks Estate have been completed, and temporary pavilion accommodation provided at a cost of about 2,600*l.* The Wholesale Markets have just been commenced by Mr. T. Herbert, under the supervision of Mr. W. Brand, the architect.

BUILDING IN LEITH.—The past year compares favourably with other years as to the number of petitions presented to the Dean of Guild Court for construction of new work and alterations on existing buildings within the burgh of Leith. Several large buildings have been completed, while others are nearing completion. The North British Railway Company's new station buildings at the foot of Leith-walk are approaching completion, several of the shops being already occupied. Owing to the high prices of all materials and labour, and the high interest for draft rates at the banks, there appears every prospect of the past financial prosperity of the building trade receiving a check, and quieter times may be looked for in the future.

BUILDING IN MANCHESTER.—The building trade in all its branches has throughout Manchester, Salford, and district been exceedingly brisk during the year. Wages have had a tendency to go up, and with one exception the year has been free from strikes or disputes of any magnitude. That exception was the sixteen weeks' strike or lock-out of the plasterers. Generally speaking the volume of trade has been greater than previously. There have been more large undertakings than usual, amongst these being the erection and completion of the new goods station of the Great Northern Railway Company, at a cost of considerably over a quarter of a million pounds, and the building of numerous warehouses and works. The prospects for the coming year are bright.

BUILDING IN NEWCASTLE.—According to the *Newcastle Journal* the past year has been a record one for building work in Newcastle, and the prices of materials and labour have very much increased. In the advances the metal market may be said to have shared the most, hardware goods being up as much as 15 to 20 per cent. In looking over the returns of new premises erected, it would seem as though there has scarcely been quite the increase in public buildings, including churches and schools, that have been reported in other years; but still the work effected in this direction has been considerable, and the contracts in hand are numerous and extensive. Mention may be made of the practical completion of the Y.M.C.A. premises in Blackett-street, the City Asylum at Coxlodge, and the Central Methodist Chapel in Northumberland-road. Of the works to be undertaken during the present year the most important and the most costly is that for the new Infirmary upon the Castle Leazes. It is proposed to spend a little short of 150,000*l.* on the building and equipment. Mr. W. Lister Newcombe, with Mr. H. P. Adams, London, are the architects for the Infirmary, the foundation-stone of which, it is hoped, will be laid by a representative of the Royal Family during the summer of this year. It is contemplated to make some alterations and build additions to the workhouse, Westgate Hill, and the Board of Guardians have instructed Mr. W. Lister Newcombe to prepare plans for this work. Plans were approved by the Town Improvement Committee during November for new Presbyterian Church, with hall, class-rooms, and caretaker's house in College-road, for the Blackett-street congregation, whose church was recently sold to erect business premises. The church will accommodate 800 and the hall 500. The whole of the buildings are to be built in stone, and the design is Late Gothic. The church is designed with wide nave and transepts and narrow aisles, and has a square tower at the south-west corner of the site nearly 70 ft. high. Messrs. Badenoch & Bruce are the architects. The extension of the City Asylum at Gosforth, which has been carried out by Mr. Walter Scott from the designs of Mr. J. W. Dyson, is now almost completed, and a portion of it will be in occupation in a few weeks' time. The engineering section is now working, supplying the old buildings with heat and power. The new buildings at Middleton St. George, which have been erected for the transfer of Dunston Lodge Private Asylum, are nearing completion. These have been erected by Mr. Thomas Beetham, of West Hartlepool, under the superintendence of Mr. Dyson, architect, of Newcastle. As was the case last year, the most conspicuous feature of the private building work of the year in Newcastle has been the enormous increase of the dwelling-house property. This development of estates occurs now in the west end, in the directions of Fenham and Elswick; at Jesmond in the area between Moor View and the North-road; and also on a large scale at Heaton. Vast blocks of dwelling-houses have been completed during the year, others are in rapid progress, and at the meetings of the Town Improvement Committee of the Newcastle Corporation there are constantly submitted plans for the laying-out of new estates on similar lines, the schemes again and again embodying the designs for as many as 700 and 800 houses at one time. Further developments in this way are spoken of at Jesmond, where, in the last four or five years, the builder has been in continual employment. On the west turnpike, between Westgate-road and New Benwell, the land is undergoing a quick transformation, and the Wingrove estate is being built on very extensively. In the centre of the city several business premises are being proceeded with, and in this connexion special mention should be made of the enlargement of the "County Hotel," in accordance with the plans of Mr. Graham. Amongst the many building estate developments in Newcastle and neighbourhood is the Benwell Grove estate, acquired by Messrs. Forsyth in the spring of last year, and the land is now being rapidly covered by dwelling-houses of various kinds. The land immediately adjoins the western boundary of the city, and has a frontage to Westgate-road on the north side. Some 600 houses are to be built here, and plans have already been approved for some 350 of these. Westgate-road, being an important thoroughfare, will be made 45 ft. in width, and the roads run at right angles from this main thoroughfare. On the West Jesmond estate some 400 houses have now been completed and occupied. Most of the streets are now paved, and the new railway station is approaching completion. The School Board have decided to commence with the new school, and have instructed the estate architect to prepare plans for the infants' department. The architect for these estates is Mr. Charles S. Errington, Newcastle.

BUILDING IN NOTTINGHAM.—During the year ending November 30, the number of plans deposited was 916, only 206 being rejected. In the same period 842 houses were certified for occupation. The number of buildings approved of last year was 1,432, against 1,539 the previous year. One of the most important additions to public buildings has been the erection of a new wing at the General Hospital. A large sweet factory has been erected in Canal-street; and the ancient building, the "Star" Inn, at the bottom of Wheeler-gate, has been pulled down and rebuilt. The Gaiety Palace of Varieties, in Market-street, has been reconstructed, and new bank premises have been built on St. Ann's Well-road and near Carrington-street Bridge respectively, the former by the Midland and District Counties Bank and the latter by the Nottingham Joint Stock Bank. Considerable additions have been made to premises situated on Carlton-road, and considerable alterations have been made to the Victoria Hall, Talbot-street. Additions have been made to the Beech-avenue Workhouse, a new wing having been built in Gladstone-street. The Presbyterian Church in Mansfield-road has been completed by Messrs. Brewill & Baily. A number of cottages have been built in Bulwell, and during the year between 200 and 300 plans for houses in the Sneinton district have been approved of. There has been a little activity in building operations in the Meadows district, several houses having been built on the west side of Wilford-road. The Mundella Board School has been completed and opened, and at the corner of Traffic-street and Wilford-road the worshippers of St. Aidens have erected a mission-room. Steady progress has been made with the building operations in Lenton.

BUILDING TRADE IN PETERHEAD.—The building boom of the past year or so has still been maintained, and the workmen of the kindred trades—masons, joiners, plasterers, slaters, plumbers, and painters—have been fully employed during the past twelve months. Slight agitations have arisen among the painters and among a few of the joiners for an increase of wages, but these were amicably settled.

DEANSGATE ARCADE, MANCHESTER.—The new Deansgate Arcade, which is placed opposite to Barton Arcade, is now approaching completion. Faced inside and out with buff terra-cotta the main front of the building rises to a height of six stories.

The back of the arcade, five stories high, looks upon St. Mary's Gardens, the site of old St. Mary's Church, which in the hands of the Corporation has been planted with shrubs and plants. Right and left of the main entrance in Deansgate are shops, and additional shops line the two sides of the arcade. Above these, and across each end, range two open balconies, giving access to the business offices. These are approached from the ground floor by two main staircases, and at the Deansgate end of the arcade by the side of the staircase there is to be a passenger hoist. The offices above the ground floor number about eighty, and each room contains an ordinary firegrate. A feature of the arcade is that in a wide corridor in the basement, lined with white-glazed brick, the goods from the shops overhead are to be packed and forwarded from the building by means of the hoist provided for that purpose at the rear. The architect is Mr. John Brooke, of Manchester; and Messrs. S. Megarity & Co. and Messrs. Homan & Rodgers are the principal contractors.

BANKING PREMISES, FLEET-STREET.—The new banking premises for Messrs. Barclay, Bevan, & Co., in Fleet-street, are nearing completion. The building has been erected at a cost of 25,000*l*, from the designs and under the superintendence of Mr. Arthur C. Blomfield.

UNITED PRESBYTERIAN CHURCH, DUNDEE.—The new church built by Park United Presbyterian congregation, Dundee, was opened on the 23rd ult. The new church occupies a position at the corner of Park-avenue and Morgan-street, and a tower, 63 ft. to the top of the parapet, and 87 ft. to the top of the finial, is placed at the corner. The elevations to both streets consist of gables, each with three buttresses and two double-light traceried windows. The main entrance is under the tower, and it is flanked on each side by turrets for the gallery stair and main corridor. The style is Early English, and the building is of blue Forfarshire stone. The features of the interior are its octagonal plan with concentric seating and the effect of spaciousness. All the congregation look directly towards the pulpit; the galleries go round three sides of the building. The floor is sloped towards the pulpit, which is set on a large choir platform, and space is also provided for an organ. The pulpit is set in a recess, over which is a moulded arch, and in the gable above there is a large wheel window with tracery. The roof and ceiling are of wood. There is a vestry, ladies' room, engine-room, and lavatories at the back, and the heating chamber is underneath the church. The outlets for foul air consist of two of Cousland's roof ventilators and also of ventilators in the ceiling, with louvre openings in the gables. The church is seated for 680, and the total cost will amount to 3,200*l*. Mr. Leslie Ower is architect. The contractors were:—Mason work, Mr. William Bennet; joiner work, Messrs. J. F. Shaw & Son; plumber work, Messrs. William Mitchell & Son; slater work, Mr. William Brand, Arbroath; plaster work, Messrs. Reoch & Kilgour; glazier work, Messrs. Lindsay & Scott; heating, Mr. David Keay; gates and railings, Mr. A. M'Call; carving, Messrs. D. Carnegie & Sons; painting, Messrs. J. & J. Geddes; inspectors of works, Mr. William Dick and Mr. John Low.

PROPOSED JOINT HOSPITAL, ROMFORD.—At the Council Chamber, Romford, Mr. Arnold Royle, C.B., an Inspector of the Local Government Board, recently held an inquiry respecting the application of the Romford Urban and Rural District Councils for permission to borrow £10,500 for the purchase of a site and the erection of an isolation hospital at Dagenham for the joint authorities. Mr. F. Whitmore, of Chelmsford, is the architect.

NEW INFIRMARY, LISKEARD.—Mr. Preston Thomas, Local Government Board Inspector, opened the Liskeard new infirmary, which adjoins the Workhouse, on Saturday, last week. The infirmary has been erected at an estimated cost of 4,500*l*., and will entail an expenditure of about 6,000*l* for appliances and other necessaries. It will accommodate sixty beds. The contract was carried out by Messrs. Hobbs & Bartlett, Mr. Sansom, Liskeard, being the architect.

ST. MARYLEBONE CHURCH INSTITUTE.—The Duke and Duchess of Fife visited the new St. Marylebone Church Institute and Club, at Paddington-street, on Wednesday, and formally declared the building open. In addition to a central hall, there is a library, and dining, reading, games, billiard, sitting and bed rooms, and access to the mission church is obtained at the rear of the Institute. The total cost of the new building is about 9,000*l*. Mr. T. Harris, of Bloomsbury, was the architect; and Mr. H. H. Sherwin, of Waddesdon, the contractor.

SANITARY AND ENGINEERING NEWS.

THE ENGINEERING TRADES.—Messrs. Matheson & Grant's half-yearly circular states that the year opens with peculiar and unprecedented conditions. On the one hand, activity in all branches of trade with enhanced prices and good prospects for the immediate future; on the other hand, a war which has cost much in life and treasure, and which has ominous possibilities of further embarrassments. The 6 per cent. Bank rate of discount and the great fall in the price of Consols are signs of a financial stringency which is likely to limit or forbid many of the enterprises on which engineers depend. In all the engineering trades the element of time has become of even more importance than price. Manufacturers are unable to take full advantage of the present high rates because they cannot obtain the necessary raw material quickly enough. Midland and Northern coal of the kinds used on railways, at gasworks, and by engineers is steadily rising in price, and where annual contracts are usual, they have been made for 1900 at rates about 2s. 6d. per ton higher than those of last January. Coke has advanced at a greater ratio, and those who are fortunate enough to possess coke ovens of a modern kind are reaping large profits. Steel and iron continued to rise in price during the autumn, and stand at a higher level than at any time since 1872. The value of iron ore has risen, and the kinds suitable for steel making and accessible within economical limits of carriage are scarce. The present high prices ruling for rails, plates, and sections are only possible because American and German competition is unavailing, each country being fully occupied by its home demand. In steel and iron structures the present activity is due rather to an aggregate of moderate contracts than from many undertakings of magnitude. The numerous widenings on the home railways are requiring a large tonnage of girders and pressed flooring. The export of bridges to India continues, and if railways are extended there as promised, should increase. Mechanical engineers are fully occupied, and although in some branches prices have not advanced more than enough to balance the higher cost, all alike are able from the urgent needs of purchasers to obtain more favourable conditions than are usually granted by official and other buyers. Great advances continue to be made in science and application of electrical energy. The development in Germany, Switzerland, and the United States has been greater than in England, where in regard especially to electric lighting and tramways, progress is restricted by the influence and opposition of the municipalities, who too frequently impede private enterprise in towns and districts not prepared to expend public money. The two largest manufacturing companies of electrical machinery in the United States or in the world are establishing extensive works in the English Midland counties. The high price of copper during the last two years, although partly due to speculative and artificial causes, is really, and in the main, justified by the demands for electric conductors and appliances.

SEA WATER FOR LONDON.—Under their Act of 1896 (59 and 60 Vict., c. 158) the London Sea Water Company, whose engineers are Messrs. Hawkshaw & Hayter, and Mr. J. S. Macintyre, M.Inst.C.E., obtained powers for bringing a supply of sea water from near Lancing into Central London, in mains leading from a reservoir 480 ft. above sea level, through Horsham, Dorking, and Leatherhead, to a second reservoir at Epsom, and thence through Streatham and Battersea. The company have prepared a Bill for next Session which shall authorise them to proceed with their enterprise and to lay down further aqueducts and conduits through and in the parishes of Fulham, Hammersmith, Paddington, and Kensington, to serve the localities around Pembridge-square, Gloucester-terrace, and Westbourne Grove, Bayswater; Shepherd's Bush-green, Brook-green, Colet-gardens, Goldhawk-road, Holland Park-avenue, and Uxbridge-road.

STAINED GLASS AND DECORATION.

MEMORIAL WINDOWS, ACKLAM CHURCH, YORKSHIRE.—Two stained-glass windows, one in the chancel, and one in the nave, have been erected in this church. The windows were the work of Messrs. Percy Bacon & Bros., of London.

MEMORIAL WINDOW, ST. MARY'S CHAPEL, ABERDEEN.—A three-light stained-glass window, in honour of the Rev. Professor James Cooper, D.D., was unveiled recently in this chapel. The window was designed by Mr. Whall, of London, and its erection was superintended by Mr. W. Kelly, architect, of Aberdeen.

MEMORIAL WINDOW, ST. MARTIN'S CHURCH, LEICESTER.—A stained-glass window, in memory of the late Colonel Reader, was unveiled recently in a chapel in St. Martin's Church, Leicester. The window is by Messrs. Clayton & Bell, of London.

MEMORIAL WINDOWS, EAST HANNINGFIELD CHURCH, ESSEX.—New east, west, north, and south windows in painted glass have been placed in this church. The work was executed by Mr. O. Hemming, of London.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. T. W. Aldwinckle, architect, of 1, Victoria-street, Westminster, has taken into partnership his eldest son, Mr. Wilson Aldwinckle, and the title of the firm will be "Thos. W. Aldwinckle & Son."——The business carried on by Messrs. Francis & Co. at 64-70, Gray's Inn-road, London, W.C., as revolving shutter, brass shop front, spring roller sunblind, &c., manufacturers, has been converted into a private limited company. No shares will be offered to the public. The style of the firm will be S. W. Francis & Co., Limited, and the business will be carried on and conducted at the same address by the same staff of employees as at present.——Messrs. Lockerbie & Wilkinson, Limited, art metal workers, &c., Birmingham, have acquired the whole of the patents, stock, plant, and goodwill of the business of the Thornton-Scarth Automatic Lighting Syndicate, Limited, as a going concern, and are carrying it on as a special department of their business. The sales management of the acetylene department will be, as formerly, in the hands of Mr. E. L. Levetus.——Messrs. Hayward Brothers & Eckstein, Limited, of Union-street, Borough, SE., have opened a new west end show room at 16, James-street, Haymarket, S.W.

DISCOVERY OF A ROMAN VILLA, BRISLINGTON, SOMERSETSHIRE.—The discovery of a Roman villa at Brislington is creating, says the *Bristol Times*, quite a stir among local antiquaries, many of whom have paid a visit to the spot. The locale is near the summit of the hill which leads to Wick-lane. The discovery was made while excavations were in progress for the purpose of laying a sewer under the road, which is to be developed for building purposes. At a depth of barely 2 ft. a portion of a Roman tesselated pavement was come upon. The find soon became generally known, and before precautions could be taken to protect this interesting memento some mischievous boys had destroyed a little of the borderings. When some of the members of the Clifton Antiquarian Society had visited the spot, they realised the importance of the discovery, and obtained the permission of the owners of the land to protect the remains from further depredation, and they have temporarily covered in the portion of the pavement brought to light, and engaged a man to keep off would-be vandals. The pavement is, considering its nearness to the surface, in excellent condition, and the colourings are splendidly preserved. The designs are in many cases undisturbed, and it is hoped that some portion of the pavement may find a permanent resting-place in the Museum. A casual inspection showed marks of Roman masonry within a few feet of the highway, and all this points to the fact that when the excavations are continued many interesting curios may be found.

ELECTRIC LIGHTING SCHEME FOR DUBLIN.—The City Council of Dublin having obtained last Session an addition to its borrowing powers, has just resolved to carry out a comprehensive scheme of electric light and power supply, prepared by Mr. Robert Hammond, M.Inst.C.E., of Westminster, involving an expenditure of 254,000*l*.

BUST OF THE QUEEN, LEWES.—A bust of the Queen was unveiled on the 29th ult. in the entrance hall of the Municipal Buildings, Lewes. The sculptor was Mr. Percy Wood, of London.

NEW CLOCK, BRIMSCOMBE.—A large chiming clock has been erected on the Parish Church of Brimscombe (Gloucestershire). The makers are Messrs. John Smith & Sons, Midland Clock Works, Derby.

THE SANITARY INSTITUTE.—At an examination in practical sanitary science, held in Manchester on December 15 and 16, six candidates presented themselves. The following two candidates were granted certificates in practical sanitary science:—Thomas Overbury, Cheltenham; and James Henry Sutcliffe, Hebden Bridge.

LABOUR IN THE COLONIES.—The January circular of the Emigrants' Information Office (31, Broadway, Westminster) states that in New South Wales there is practically no demand for miners or mechanics, unless they are specially competent and have a little money when they arrive. In Victoria there is not much improvement in the general demand for labour, except that a considerable number of those out of employment have been set to work on railway construction. In South Australia there is no demand for more mechanics in Adelaide or elsewhere, but miners have been well employed. In Queensland there has been a general improvement in trade, and in the demand for labour; the depression has almost entirely passed away, and the disposal of the unemployed has ceased to be a difficulty. There is a good demand for farm labourers, miners, and female servants, for a few engine fitters, carpenters, blacksmiths, wheelwrights, galvanised-iron workers, and coopers. In Western Australia the population, though it has rapidly increased, is still small, and, therefore, the demand for all kinds of labour is necessarily limited; but a really first-class man can always get employment in the building and kindred trades. Speaking generally, prospects are better than they were a year ago, and many of those who left the colony during the depression have returned. In Tasmania good miners, navvies, and mechanics (especially first-class fitters, carpenters, and men in the building trades) can always get work, but there is no demand for inexperienced men. The timber trade in the south-west has been busy, and men in saw-mills have been fully employed. In other parts of the colony there is no general demand for more mechanics. In New Zealand there has been plenty of employment for men in the building and engineering trades, and in the flax mills and saw mills. With regard to South Africa, persons are warned against going there at the present time in search of work.

PRICES CURRENT OF MATERIALS:

WOOD.*

Per Petersburg standard hundred.

	£	s.	d.	£	s.	d.
White Sea: first yellow deals	18	0	0	21	10	0
Second do.	16	0	0	18	0	0
Third do.	13	10	0	15	0	0
Battens, 40s., 30s., and 15s. less respectively.						
Petersburg: first yellow deals	15	0	0	17	10	0
Second do.	12	0	0	13	10	0
Battens, 30s. and 20s. less respectively.						
Petersburg, white deals	10	10	0	12	10	0
Do. white battens	9	0	0	10	0	0
Riga, white deals	9	10	0	10	10	0
Swedish mixed yellow deals	16	0	0	18	0	0
Third do.	14	0	0	16	0	0
Fourth do.	12	0	0	13	0	0
Fifth do.	11	0	0	12	0	0
Battens, 30s., 20s., and 10s. less respectively.						
Whitewood, 10 to 20 per cent. less.						
Finnish unsorted yellow deals	11	0	0	11	10	0
Battens, 10s. and 5s. less respectively.						
Whitewood, 5 to 10 per cent. less.						
Norwegian second yellow battens	8	0	0	8	10	0
Third do.	7	15	0	8	0	0
Fourth do.	7	10	0	7	15	0
Whitewood, 10s. less.						
Danzig, Crown Deck deals, per 40 ft. 3 in.	0	15	0	1	5	0
Brack	0	12	0	1	0	0
St. Lawrence Pine deals, &c., per P.S.H.:—						
1st, Bright and Dry, regular sizes	20	0	0	27	0	0
" " oddments	13	0	0	20	0	0
2nd " regular sizes	15	0	0	17	10	0
" " oddments	10	0	0	14	0	0
3rd " regular sizes	9	0	0	11	0	0
" " oddments	7	10	0	9	10	0
4th " regular sizes	8	0	0	9	0	0
" " oddments	7	0	0	8	10	0
St. Lawrence Spruce deals, &c.						
First, regular sizes	9	10	0	12	10	0
Second "	9	0	0	9	10	0
Third "	8	15	0	9	0	0
Fourth "	8	0	0	8	12	0
Oddments and battens at 20s., 10s., 7s. 6d., and 5s. less respectively.						
New Brunswick Spruce deals, &c.	8	10	0	9	0	0
Oddments, battens, and fourths	8	0	0	8	10	0
United States pitch pine planks and boards	10	0	0	13	0	0
Prepared Boards, per square						
1¼ by 6½ and 7 in. 1st yellow		10	0		15	0
" " " and "		0	6		12	0
1 by 6½ and 7 in. 1st "		9	0		11	0
" " " white		8	0		9	6
" " and yellow		8	0		10	0
" " " white		7	0		8	0
¾ by 6½ & 7 in. 1st & 2nd yellow		7	9		9	0
" " " white		7	6		8	6
¾ by 6½ and 7 in. 1st yellow and white (grooved, tongued, and beaded)		8	0		9	6
¾ by 6½ and 7 in. 2nd yellow and white (ditto)		7	6		8	6
¾ by 6½ and 7 in. 1st yellow and white (ditto)					7	6
¾ by 6½ and 7 in. 2nd yellow and white (ditto)		6	0		7	0
Narrower widths at 10 per cent. less. 3rd quality at 15 per cent. less than 2nd.						
Danzig and Memel Fir Timber— per load						
Best middling	3	15	0	4	0	0
Good middling and Second	3	5	0	3	10	0
Common middling	3	0	0	3	5	0
Undersized	3	0	0	3	5	0
Swedish and Norwegian Balks	2	10	0	2	15	0
Baltic Oak Timber—						
Danzig and Stettin—Large	3	5	0	4	5	0
Small	2	10	0	3	5	0
Quebec Timber per load						
Yellow Pine	4	15	0	6	5	0
Oak	4	12	6	6	15	0
Elm	4	2	6	4	7	6
Ash	3	7	6	4	2	6
Birch	3	7	6	5	15	0
New Brunswick, &c., Birch	3	2	6	3	12	6
American Pitch Pine Timber	3	17	6	4	10	0
Wainscot, per log, 18 cubic ft.—						
Crown (Eng. & Dutch) } nominal	3	7	6	4	10	0
Brack } nominal	2	12	6	3	12	6
Lathwood, per cubic fathom—						
Petersburg	4	0	0	6	10	0
Riga and Danzig	4	10	0	5	10	0
Norway Poles, per ft. run	0	0	1	0	0	1½
Oak Staves, per mille full size pipe						
Memel, Crown	220	0	0	230	0	0
Brack	190	0	0	200	0	0
Danzig	165	0	0	175	0	0
Bosnia, single Barrel (nominal)	28	0	0	30	0	0
United States, Pipe	37	10	0	45	0	0
Hogshead, extra heavy and double extra	32	0	0	35	0	0
Indian Teake per load	11	10	0	17	0	0
British Guiana Greenheart	0	0	0	8	0	0
Mahogany, per foot superficial—						
Honduras, cargo average	0	0	5	0	0	6½
Nicaragua, do.	0	0	4½	0	0	5½
Tabasco, do.	0	0	4½	0	0	6½
Mexican, do.	0	0	4	0	0	4½
Panama, do.	0	0	3	0	0	4
African, do.	0	0	3½	0	0	5½
Cuba, do.	0	0	6	0	0	8
St. Domingo, do.	0	0	5	0	0	7½
Do. Curls (good to prime)	0	0	9	0	1	3
Walnut, American (logs)	0	2	3	0	4	6
Do. do. (planks and boards)	0	2	0	0	7	6
Italian, per foot superficial	0	0	3	0	0	7½
Black Sea, per ton	6	0	0	12	0	0

* The prices named are for the wood as imported and landed in the docks. Ten per cent., approximately, should be added in order to arrive at the current trade prices.

PRICES CURRENT—*continued.*

	£	s.	d.	£	s.	d.
Satin Walnut (logs) per foot cube	0	1	0	0	1	3
" (planks and boards)	0	2	0	0	2	9
Sequoia (Californian redwood), per foot cube	0	1	9	0	2	0
Whitewood, American (logs)	0	1	3	0	1	6
" " (planks and boards)	0	1	6	0	2	9
Quartered oak " " "	0	2	3	0	4	0
Kauri pine (logs)	0	1	9	0	2	0
" " (planks)	0	2	3	0	2	9
Jarrah (planks)	0	2	0	0	2	3
Lancewood spars each, fresh and large	0	5	0	0	8	0
Lancewood spars, ordinary to fair	0	4	0	0	5	0
Degame spars	0	8	0	0	10	0

METALS.

IRON—Pig, in Scotland ton	3	6	8	0	0	0
Bar, Welsh, in London	9	0	0	9	15	0
Do. do. at works in Wales	8	10	0	9	0	0
Do. Staffordshire, in London	9	15	0	11	15	0
COPPER—British cake and ingot	75	15	0	76	5	0
Best selected	76	15	0	77	15	0
Sheets, strong	81	0	0	83	0	0
Chili bars	70	2	6	0	0	0
YELLOW METAL lb.	6¾d.				7d.	
LEAD—Pig						
Spanish ton	16	10	0	0	0	0
English Com. Brands	16	15	0	0	0	0
Sheet, English, 6 lbs. per sq. ft. and upwards	18	0	0	0	0	0
Pipe	18	10	0	0	0	0
ZINC—English sheet ton	25	0	0	0	0	0
Vieille Montagne	26	0	0	0	0	0
Spelter	20	2	6	20	7	6
TIN—Straits	115	0	0	0	0	0
Australian	115	5	0	115	15	0
English Ingots	119	0	0	120	0	0
Banca	0	0	0	0	0	0
Billiton	0	0	0	0	0	0

OILS.

Linseed ton	22	5	0	0	0	0
Cocoanut, Cochin	29	15	0	0	0	0
Do. Ceylon	26	15	0	0	0	0
Palm, Lagos	27	10	0	0	0	0
Rapeseed, English, pale	24	15	0	0	0	0
Do. Brown	23	5	0	0	0	0
Cottonseed ref.	19	10	0	20	0	0
Oleine	17	5	0	19	5	0
Lubricating U.S.	0	8	0	0	0	0
Do. Black	0	7	6	0	0	0
TAR—Stockholm barrel	1	6	6	0	0	0
Archangel	1	0	0	0	0	0
Turpentine	38	2	6	0	0	0

BRICKS, &c.

	s.	d.			
Hard Stocks	36	6	per thousand alongside, in river.		
Rough Stocks	32	6	"	"	" "
Grizzles	32	6	"	"	" "
Fletton	31	6	"	"	at railway depôt.
Red Wire Cuts	34	0	"	"	" "
Best Fareham Red facings	71	6	"	"	" "
Best Blue Pressed Staffordshire	86	0	"	"	" "

	s.	d.	
Thames and Pit Sand	7	0	per yard, delivered.
Thames Ballast	6	0	" "
Best Heavy Portland Cement	36	0	per ton, "
Best Ground Blue Lias Lime	23	0	" "

NOTE.—The cement and lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 12s. 6d. per yard, delivered.

RECENT PATENTS:

ACCEPTED SPECIFICATIONS.

Open to Opposition until February 27.

[1898]. 20,025, Durrant, Gulleys, Traps, &c. 24,458, Worsnop, and [1899] 22,788, Richter, Acetylene Gas Lamps. 26,707, Zeschall & Resch, Mechanism for Synchronising Clocks. 26,723, Burnand, Device for Indicating the Frequency of Electrical Currents. 26,792, Stenhouse & Whitehead, Mechanical Operation of a Valve at Predetermined Times. 27,123, Beechey & Wright, Coin Freed or Actuated Meters. 27,342, Blaasch, Process for Strengthening Incandescent Gas Mantles. 27,389, Theisen, Method of Purifying Gases, and obtaining their Constituents or By-products. 27,567, Pearson, Granite, Stone, and Marble Sawing Machinery. [1899]. 629, Edwards, Pumps and Valves. 631, Duncan, Incandescent Burners and Mantle Supports. 682, Seiffert & Tomlinson, and 4,115, Caldicott, Acetylene Gas Generators. 987, St. John, Boiler Tube Cleaners or Scrapers. 1,059, Pruce, Means for Opening, Closing, and Fixing Fanlights, Windows, Doors, Ventilators, Shutters, &c. 1,078, Thompson, Self-acting Brushing Apparatus for Sieves. 1,188, Jones, Guards for Overhead Electrical Conductors. 1,223, Bowman, Gates for Mines. 1,254, Mills, Wind Guards for Chimney Tops. 1,493, Jolin, Apparatus for Heating by Electricity. 1,558, Kennedy, Brick Presses. 1,673, Blackwell & Blackwell, Portable Telephones, applicable also for Purposes of Testing. 1,761, Golding, Open or Reticulated Metal Work. 1,844, Champagne, Plates for Secondary Batteries. 1,866-8, Orling & Braunerhjelm, Receivers for Waves of Light, Heat, or Electricity, Apparatus for Regulating their Sensitivity, and Device for Regulating the Distances between Objects Hermetically Enclosed, applicable to the Receivers. 2,426, Horsfall, Domestic and Office Furniture. 2,502, McDougall, Purification of Coal Gas. 2,686, Bêché, Power Hammers. 2,759, Watson & Stevenson, Apparatus for Gaining Access to the Exterior and the Windows of, and for Escaping from, Buildings. 2,906, Cox, Switch Boards. 3,229, Marburg, Water Wheels. 3,240, Malkin, Binns, & Foster, Circular-Saw Guards. 3,272, Robinson & Crossland, Haulage Rope Clips. 3,423, Hampson, Seats for Back Boilers of Kitchen Ranges. 3,498, Norrington & Wells, Cover for Dust and Slop Carts and Vans, &c. 3,563, Molas, Lamielle, & Tessier, Screw-Down Valves. 3,650, Humbert & Bloch, Telemetrical Field Glasses, &c. 3,706, Dougill & Marks, Carburetters. 3,753, Saladin, Door Fasteners and Burglar Alarms. 3,859, Moore, a Substitute for China Stone for Earthenware, Stoneware, Tiles, Bricks, &c. 4,106, Thomson, Ladders. 4,365, Wigham, "Burning Acetylene Gas. 5,944, Rothkegel, Door Hinge. 7,428, Summers, Mortise Chisel. 8,364, Johnson, Axle, Sash, and similar Pulleys. 15,098, Johnson & Hinchliffe, Water-closet Seats. 16,123, Head & Nielsen, Method of Automatically Locking Sliding Windows. 16,795, Tornau, "Manufacture of Maps, &c." 19,301, Lefebvre, Preservative Fluid or Paint. 19,367, Goerz, Stand for Geodetical Instruments, &c. 20,027, C. A. Schuppmann, Method of Heating, Drying, or Cooking, by Means of Hot Air or Steam. 20,205, Forrest, Turnstiles. 20,862, Addenbrooke, Electrostatical Measurement of Currents in a Working Circuit, and Calibration of the Instruments Employed. 21,134, Frank, Heat Insulating Materials. 21,175, New Haven Novelty Machine Company, Prepayment Attachments for Gas and other Fluid Meters. 21,663, Fleming, and 21,664, Hartham & Stevens, Arc Lamps. 21,668, Pratt, Alternating Current Meters. 21,951, Lamb, Fencing, and similar Wire Fabrics. 22,615, Atterberg, Safety Device for Starting-switches of Electrical Motors. 22,628, Schmitz, Metal Pipes. 22,638, Sheak, Filters. 22,719, Brown, Street Sweepers. 22,809, Blathy, Magnet Cores with Ventilating Passages for Transformers, &c. 22,980-1, German, Diving Apparatus, and Apparatus for Working in Irrespirable Gases. 23,032, Cie. Française de l'Acetylène Dissous, Acetylene Gas Burners for Incandescent Lighting. 23,034, Eastmead, Self-Sustaining Gear for Hoisting, Lifting, or Winding Machinery. 23,055, Siemens & Halske, A.-G., Current Collecting Apparatus for Underground Conductors of Railways and Tramways. 23,426, Scholl, Hydraulic Gas Compressing Apparatus.

ABSTRACTS OF PATENTED INVENTIONS.

18,741.—ACETYLENE GAS; *F. C. Wilson.*—In order to provide for an automatical removal of water from the carbide concurrently with an increase in the pressure of generated gas, the lower of the two compartments of a tank is divided into a water-supplying and a gas-generating chamber; an air-tight drawer in the latter chamber is fitted with inclined carbide screens or gratings set parallel-wise, and beneath them are holes for the entrance of the water as it rises in the outer-chamber; an adjustable vent-tube, on the outside of which are an indicator-finger and a graduated scale, regulates the water's level within the supply chamber; as the bell rises with the production of gas it lifts in succession from the cover a set of weights, and with increase of pressure the water is forced away from the carbide in the generator, whilst excess gas will escape through the safety tube when the water is driven below that tube's mouth; if a large supply of gas be needed whilst the generator is being re-charged, carbide is introduced into the generating chamber upon an auxiliary drawer, water being allowed to flow from the tank upon the temporary supply of carbide.

18,874.—TOPS FOR VENTILATING SHAFTS: *R. M. Pancoast.*—Cones, inverted and erect, together with a guard-band having a level top, are carried by brackets upon a neck with its rim slightly flared, and placed around the spaces between the neck and cones; in one form the brackets have open malleable jaws for holding the ventilator's various parts.

18,879.—ANTI-INCRUSTATION COMPOUND FOR BOILERS: *T. H. Cobley.*—For colloidal tannates, disintegrated natural products containing tannin are mixed with an aqueous solution of an alkali—say, sodium carbonate or sulphite—in a steam-jacketted boiler or vacuum with an agitator; the temperature is then raised to 150 degs. F., and the composition is drawn out between rollers; more colloidal may be added, a preparation, preferably, from leather waste, which is first disintegrated and then steeped in a cold solution of sodium carbonate or sulphite.

18,902.—ROAD WATERING: *F. Hauschildt.*—Pipes, provided with a shut-off cock, join the water-main with pipe-lengths, closed at both ends and laid near the edge of the footpath; with them is connected the sprinkling-pipe, by means of other pipes which are arranged nearer to one another, and have larger bores, as they are remoter from the middle point.

18,910.—EDGE-RUNNER MILLS FOR CEMENT, SLAG, MARL, &C.: *F. Onions.*—Holes for the passage of the ground material into a fixed pan are made in that part of the upper and smaller pan which lies outside the track of the grinding wheels; the finer material passes through holes in the fixed and lower pan, to be swept away by a scraper into the hopper, and thence to the trough; in the pan's side is an opening through which the coarser substance is swept into an elevator for return into the grinding pan; the hopper is attached to girders, upon which the mill is mounted.

18,931.—PANTOGRAPHS: *A. Fourdan.*—One of two equal arms, jointed together, receives a pivot pin, the other arm holds the pencil; the two unequal

THIS WEEK'S COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered
*Proposed Church and Vicarage	Barnsley Corporation	50 gns.; 30 gns.; and 20 gns.	Feb. 12
*New Head Quarters for Essex County Constabulary	Essex Standing Joint Committee	100*l.*; 50*l.*; and 25*l.*	Mar. 31

THIS WEEK'S CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c., Supplied by	Tenders to be delivered
*Extension of Market Buildings	Borough of Oswestry	G. W. Lacey, Guildhall, Oswestry	Jan. 8
Schools, Millbridge Upper	Liversedge (Yorks.) Sch. Bd.	A. E. Rhodes, Archt., Cemetery-road, Heckmondwike	Jan. 9
Additions, &c, to Court House, Llangollen		The County Surveyor, Denbigh	do.
Alterations, &c., to Schools, Ellen-street	Hove (Sussex) Sch. Bd.	Clayton & Black, Surv., 152, North-street, Brighton	do.
*Repainting Roofs, &c.	Hackney Vestry	N. Scorgie, Town Hall, Hackney, N.E.	Jan. 10
School, Heamoor, Cornwall	Madron Sch. Bd.	O. Caldwell, Archt., Penzance	do.
Alterations at Harbour Inn, Amble		M. T. Wilson, Archt., Alnwick	do.
Church, Crosland Moor, Huddersfield		C. H. Fowler, Archt., Durham	Jan. 11
Chapel, &c., Aberavon, Port Talbot		F. B. Smith, Archt., Port Talbot	Jan. 12
Cutting Trench & Supplying & Laying Pipes nr. Bangor		Dennis & Son, Ruabon	do.
Homes, Ant-lane	Huddersfield Union	J. W. Cocking, Archt., Cloth Hall-street, Huddersfield	Jan. 13
Masonic Hall, Kilkeel, Ireland		R. B. Wray, Kilmorey Arms Hotel, Kilkeel	do.
Restoration of Bawtry Church, Yorks.		C. H. Fowler, Archt., The College, Durham	do.
Schools, Sandfield	Guildford Sch. Bd.	A. J. Sturges, Archt., 25, High-street, Guildford	do.
Extension of Workhouse	Grimsby Guardians	H. C. Scaping, Archt., Court Chambers, Gt. Grimsby	Jan. 15
Warehouse, Peckover-street, Bradford		Milnes & France, Archt., Bradford	do.
Electric Lighting Station	Tunbridge Wells Corporation	C. H. Strange, Archt., Tunbridge Wells	do.
Farm Offices, House, &c. near Derrylin, Ireland		R. Scott, 15, Willoughby-place, Enniskillen	do.
Quay Wall, &c., Inverness Harbour		J. Fraser, C.E., Inverness	do.
Church Building Work, Clonmel		W. H. Byrne, Archt., 20, Suffolk-street, Dublin	do.
*Erection of Warehouse		Goff & Co. 83, Long Acre, W.C.	do.
Electricity Station, Craven-street	Birkenhead Corporation	C. Brownridge, C.E., Town Hall	Jan. 16
Earthenware Pipe Sewers (4,000 yards)	Gomersal (Yorks.) U.D.C.	J. Waugh, C.E., Sunbridge Chambers, Bradford	do.
Greenhouse, Queen's Park	Blackburn Corporation	W. Stubbs, C.E., Municipal Offices	Jan. 17
*Supply and Fixing of Wrought-Iron Gates	Metropolitan Asylums Board	Office of the Board, Norfolk House, Norfolk-street, Strand, W.C.	Jan. 18
*Supply and Fixing of Wrot-Iron Balcony Railings, &c.	do.	do.	do.
Water Tower and Tank, Slaugham, Sussex	Cuckfield R.D.C.	J. Mansergh, Engr., 5, Victoria-street, Westminster, S.W.	do.
New Road, Monkton to Stourmouth, Ramsgate		C. Taylor, Minster, Ramsgate	Jan. 19
Underground Convenience, Queen's-road	Brighton Corporation	F. J. C. May, C.E., Town Hall	do.
*Erection of Hospital	Stourbridge & Halesowen Hos. Com.	A. T. Butler, High-street, Cradley Heath	do.
*Erection of Library	Hull Corporation	J. S. Gibson, 4, Gray's Inn-square, W.C.	Jan. 20
Nurses' Home and Laundry, Fir Vale	Sheffield Union	K. W. Mountford, Archt., 17, Buckingham-street, W.C.	do.
Manse, Ardara, Ireland		J. M. Robinson, Archt., 7, James-street, Omagh	do.
Extension of Hospital, Longshaw	Blackburn Corporation	W. Stubbs, C.E., Municipal Offices	Jan. 22
*Constructing a Sewer	Tottenham U.D.C.	P. E. Murphy, 712, High-road, Tottenham	Jan. 23
*Construction of Sewer and Removal of Syphon	do.	do.	do.
*Public Lavatories, &c.	Lewisham B. of W.	Surv. Dept. Lewisham Town Hall, Catford, S.E.	do.
*Renewing Laundry Machinery and Plant, &c.	Holborn Union	J. Buley, Suffolk House, E.C.	do.
*Supply and Fixing of Boilers, &c.	Hastings Union	Jeffery & Skiller, 5, Havelock-rd. Hastings	Jan. 25
*Erection of Cemetery Chapel, &c.	Knutsford U.D.C.	R. J. McBeath, Birnam House	do.
Sewerage Works, &c., Selston, near Basford	Kirkby-in-Ashfield U.D.C.	H. Silcock, 14, Westgate, Mansfield	Jan. 27
Two Bridges, Brambridge, Hants.	Hursley R.D.C.	Lemon & Blizard, Engr., Castle-lane, Southampton	do.
Concrete Wall, Bancroft Gardens	Stratford-upon-Avon T.C.	R. Dixon, C.E., Municipal Offices, Stratford-upon-Avon	Jan. 29
Schools, High Barnes Estate, Bishop Wearmouth	Sunderland School Board	T. W. Bryers, School Board Offices, Sunderland	do.
*Works, &c.	City of Sheffield	C. F. Wike, Town Hall, Sheffield	Jan. 31
Hospital, Belfast	Committee	Henman & Cooper, Archt., Birmingham	Feb. 1
*Erection of New Brewery	Budden & Biggs, Limited	I. McMullen Brooks, 60, Watling-street, E.C.	No date
150 Houses, Ebbw Vale, Mon.		Secretary, Ebbw Vale Co., Estate Office, Ebbw Vale	do.
Pair Semi-detached Houses, Beach-road, Felixstowe	A. W. Franklin	H. W. Buxton, Archt., Lorne Buildings, Felixstowe	do.
Shop, Riding School, &c., Clyde-street, Grimsby	Albatross Cycle Co.	G. E. W. Davis, Archt., Victoria Chambers, Great Grimsby	do.
Additions to Inn, Manton	Worksop & Retford Brewery Co. Ld.	Vallance & Westwick, Archt., White Hart Chambers, Mansfield	do.
Rebuilding Rose and Crown Inn, Farnworth, nr. Bolton		C. H. Openshaw, Archt., Fleet-street, Bury	do.
Alterations, &c., to Three Houses, Park-road	Bradford Guardians	F. Holland, Archt., Hustlergate, Bradford	do.
Alterations to Premises, N. Station Parade, Harrogate	C. H. Bargess	H. E. & A. Bown, Archt., James-street, Harrogate	do.
Additions, &c., to National School, Abergavenny		E. A. Johnson, Archt., Abergavenny	do.
Restoration, Central Church, Derby		H. Morrell, 15, Franchise-street, Derby	do.

THIS WEEK'S PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*Architectural Assistant	County Borough of Cardiff	2*l.* 7s. 6d. per week	Jan. 10
*Assistant	St. Mary Vestry, Islington	180*l.* per annum	Jan. 17
*Instructors in Woodwork	School Board for London	100*l.* per annum	Jan. 20
*Buildings' Inspectors (2)	Tottenham U.D.C.	150*l.* per annum	Jan. 22
*Clerk of Works	do.	2*l.* 10s. per week	do.
*Architectural Draughtsman	Borough of Devonport	2*l.* 2s. per week	No date

Those marked with an asterisk (*) are advertised in this Number. Competitions, p. iv. *Contracts, pp.* iv. vi. viii. x. xii. *&* xxix. *Public Appointments, pp.* xxviib. *&* xxix

arms, which are pivotted together, are also pivotted adjustably to the two equal arms accordingly with the size of the required copy by means of scales, which are marked upon the arms to indicate the positions—in all of which the unjointed ends of the two equal arms and the pivot of the two unequal arms must be in one straight line; a lense is placed over the tracing point.

18,942.—ROOFS AND ROOFING: *A. Allen.*—For flat roofs are used boards covered with layers of asphalt, paper, felt, cement, vulcanite, or other materials, strengthened with sheets of woven wire or other fabric, which may be either built into the brickwork or turned up the wall's face. Over the covering is spread sand and gravel, which is kept in position at the roof's edge by an iron kerb fastened by a nut upon a screw which projects from a bracket or plate. To prevent the roofing from running into the gutter, a packing of rope is laid upon a flange of the kerb, whilst a metal strip prevents water from entering behind the gutter, and a curved perforated earthenware screen serves to protect the outlet which leads to the gutter.

18,944.—GAS IGNITION: *H. Borchardt.*—The invention consists of an automatical igniter for incandescent and other gas lamps; in the chimney is an opening, in front of which the platinum sponge is placed, the ignition being effected by platinum wires; when the gas is ignited a counterweighted plate, which normally closes the top of the chimney, is turned upwards. In a modified shape of the contrivance the covering plate is arched by means of a wire, so that it may form the conduit in front of which the platinum sponge is held.

18,953.—FIREPROOFING FOR WOOD, PASTEBOARD, &C.: *S. Jablôuski & S. Niewiarowski.*—A first coating is made of an admixture of bicarbonate of potash, water-glass, and spirit varnish; a fire-proofing composition is then applied; the latter may be made up in three ways—(a) a solution of water-glass mixed with the varnish already described; (b) by mixing pulverised graphite, yellow ochre, sifted ashes, varnish, water-glass, and chalk; (c) by adding pulverised peat to (b); the compound (b) is for treating wood, paste-board thickly coated with (b), a set of superposed coated boards being dried under great pressure, to be strengthened with alternate layers of hardened steel or woven wirework, will serve for chests, strong-rooms, cupboards, and similar receptacles.

19,052.—DOOR-LATCHES: *G. Anslow.*—For night-latches with locking-bolts, a T-shaped follower is contrived, whose two arms engage with projections upon the latch-bolt's tail, whilst a handle upon a spindle which passes through a quadrant slot in the lock case is carried by the tail of the follower in order that the latch may be operated by lowering or lifting its handle, and from the outside with a key which turns a lever.

19,102.—FIREPROOF PLASTER, &C.: *F. Bods.*—The wall or other plaster is compounded of chrysotile or serpentine rock added in excess to freshly-slaked lime, the union of the lime and rock forming a binding calcium magnesium silicate. The material is fashioned into slabs that may be fastened to the frame of the building.

19,161.—BRICKS: *S. J. Adams.*—The bricks having dovetailed grooves or recesses (see Nos. 11,538 of 1893, and 713 of 1894) are made with elliptical or other shaped holes parallel to the grooves, and with arches or cambered swellings below and above the holes in the grooves. Headers are made with central transverse elliptical or round holes, and stretchers with semi-elliptical or semi-circular grooves in their inner sides, that their weight may be lessened. Blocks of a size larger than that of an ordinary brick are made with outer grooves for mortar, and in the case of quoins, the recesses and holes are not carried as far as the brick's face.

MEETINGS.

SATURDAY, JANUARY 6.

British Institute of Certified Carpenters (Carpenters' Hall). 6 p.m.

Sanitary Inspectors' Association. — Extraordinary General Meeting (1) to Ballot for the Election of Gentlemen nominated by the Council as Honorary Members. (2) The President's New Year's Address.

MONDAY, JANUARY 8.

Royal Institute of British Architects.—Fifth General Meeting (Business) to elect candidates for membership and to discuss various questions connected with the position of Associates. 8 p.m.

Institution of Mechanical Engineers (Graduates' Meeting).—Mr. H. H. Mogg on "Treatment of Sewage and Sewage Sludge in Rural Districts." 7.30 p.m.

Bristol Society of Architects.—Mr. Beresford Pite on "Architecture in Palestine, Ancient and Modern," with limelight illustrations. 8 p.m.

Liverpool Architectural Society.—Mr. Herbert Bryans on "Stained Glass." 6 p.m.

Leeds and Yorkshire Architectural Society.—Professor Goodman on "Steel Construction in Buildings." 6.30 p.m

TUESDAY, JANUARY 9.

Institution of Civil Engineers.—Papers to be read with a view to discussion—(1) "The Purification of Water after its Use in Manufactories," by Mr. Reginald A. Tatton; and (2) "Experiments on the Purification of Waste-Water from Factories," by Mr. W. O. E. Meade-King. 8 p.m.

Sheffield Society of Architects and Surveyors.—Paper by Mr. Walter Emden, J.P., entitled "Suggestions for Dealing with the Law as to Light and Air in Building Cases."

Architectural Association of Ireland (Grosvenor Hotel, Westland-row).—Sir Charles Cameron on "Pigments." 8 p.m.

WEDNESDAY, JANUARY 10.

Edinburgh Architectural Association.—Paper by representative of the Glasgow Architectural Association. 8 p.m

THURSDAY, JANUARY 11.

Institution of Electrical Engineers.—Report of the Institution's Visit to Switzerland. The Report will be taken as read, and the discussion will be opened by Mr. Crompton by a comparison between British and Continental practice in electrical engineering. 8 p.m.

FRIDAY, JANUARY 12.

Architectural Association.—Mr. Arthur Bolton on "The Dome as the Basis of an Architectural System," illustrated by measured drawings of Italian churches. 7.30 p.m.

Glasgow Architectural Craftsmen Society.—Mr. H. F. Bladen on "Structural Work of Theatre Auditoriums." 8 p.m.

Institution of Civil Engineers (Students' Meeting).—Address by Professor T. Claxton Fidler on "The Theory of Structures and Strength of Materials." 8 p.m.

SATURDAY, JANUARY 13.

Dundee Institute of Architecture.—Visit to Perth.

TO CORRESPONDENTS.

NOTE.—**The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.**

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

ABINGDON.—For the erection of a hospital, for the Joint Hospital Board. Mr. J. G. T. West, architect, Abingdon :—

Kingerlee & Sons	£6,887	Walden & Cox	£5,821
Musselwhite & Son	6,298	Brasher & Sons	5,755
J. Grant	5,987	J. Buckle, Abingdon*	5,150

BODMIN.—For additions to schools, &c., for the School Board. Mr. W. J. Jenkins, surveyor, Bodmin :—
J. R. Hancock, St. Germans, Cornwall £545

BRIDLINGTON.—For the erection of business premises, 61, High-street, for Mr. J. Wilcock. Mr. S. Dyer architect, Bridlington :—

E. Corner	£615 0 0	C. Lemon	£508 8 9
Barr & Booth	538 0 0	T. Atkins	500 0 0
A. Gardam	523 16 6	Barnes, Travie-street, Bridlington*	499 19 9
E. Yeomans	520 0 0		

BRIDLINGTON.—For making road and sewer, Borough-road extension, &c. Mr. Samuel Dyer, architect, Bridlington :—
Brumby Robinson £189 10
Robert Musk, Bridlington* 278 0

BRIGHTLINGSEA (Essex).—For the supply and laying about 3,430 yards water mains, for the Urban District Council. Mr. H. Goodyear, engineer, Colchester :—

W. Griffiths	£1,950 0 0	Lewellen & Co.	£1,540 19 11
Chandler & Sons	1,860 12 5	Manders, Leyton*	1,423 1 11
Stone Bros.	1,624 8 9	Blyth Bros.	1,411 15 0

BRIGHTON.—For the construction of an underground urinal, Elm-grove. Mr. F. J. C. May, C.E., Town Hall, Brighton :—

H. J. Penfold	£567	Satten & Evershed,	
Field & Co.	506	Freshfield-rd., Br'ton*	£491

BURY ST. EDMUNDS.—For erecting two pairs of cottage villas. Mr. R. Mawhood, architect, Chelmsford :—
H. T. Frost, Westgate-road, Bury* £1,020

CROMER.—For alterations, &c., to east gangway, for the Urban District Council. Mr. A. F. Scott, Surveyor, Church-street, Cromer :—
Cooke & Co., Westminster, S.W.* £577
Septic Tanks.
Cooke & Co., Westminster, S.W.* £2,625
Auxiliary Sewer, Church-street.
Cooke & Co., Westminster, S.W.* £265

CROYDON.—For repairs to the "Sheldon Arms" inn, for Messrs. Nalder & Collyer, Limited. Messrs. R. M. Chart & Son, architects, Croydon :—

Hanscomb & Smith	£137	H. Bacon	£100
E. Goulder	107		

CROYDON.—For rebuilding two shops, George-street, Croydon. Messrs. R. M. Chart & Son, architects, Croydon :—

Smith & Sons	£1,987 0	E. Goulder	£1,890 0
E. J. Burnand	1,910 0	H. Bacon	1,789 10

CROYDON.—For laying about 12 miles 5 furlongs of pipe sewers with manholes, lampholes, ventilators, and flushing tanks in the parishes of Sanderstead and Coulsdon, for the Croydon Rural District Council. Messrs. R. M. Chart & Son, surveyors, Union Bank Chambers, Croydon. Quantities by Messrs. Franklin & Andrews, 25, Ludgate-hill, E.C. :—

	A	B	C	D
Free & Sons	£19,970	—	—	—
W. Langridge	19,970	—	£440	—
Ballard	15,847	—	449	—
G. Bell	13,661	—	334	—
G. Ossenton	—	£10,752	—	£4,324
J. & G. Binns	20,000	9,452	550	4,050
J. Adams	18,981	13,119	636	5,378
A. & A. Streeter	13,031	7,843	326	3,270
E. Iles	12,600*	8,121	320*	3,479

A Coulsdon, 1st portion. C Sanderstead, 1st portion.
B Do. 2nd do. D Do. 2nd do.

DUDLEY.—For the erection of residence and stabling, Priory-road, Dudley, for Dr. Messiter. Mr. A. Ramsell, architect, Dudley :—
Mark Round, Dudley* £2,115

DUDLEY.—For alterations to warehouses, High-street, Dudley, for Messrs. Grainger & Smith. Mr. A. Ramsell, architect, Dudley :—
Mark Round, Dudley* £995

EAST GRINSTEAD.—For repairs at the East Grinstead Hotel. Messrs. R. M. Chart & Son, architects, Croydon :—

H. Young	£151	E. Goulder	£113

FARNBOROUGH.—For rebuilding the "Queen's Head" inn and stables, Greenstreet Green, Farnborough, Kent, for Messrs. Nalder & Collyer, Limited. Messrs. R. M. Chart & Son, architects, Croydon :—

J. Quittenton	£3,297	Somerford & Son	£2,748
W. Owen	2,980	Truett & Steel	2,644
Smith & Son, Bromley	2,930	Thos. Knight	2,339
Smith & Son, Croydon	2,780		

BARKING (Essex).—For the Kennedy Estate Drainage, for the Barking Town Urban District Council. Mr. C. F. Dawson, Surveyor, Council Offices, Barking :—

—	Sewer and Surface Water Drain.			Ejector station.
	With Hassall's patent pipes for sewer.	With Button's patent pipes for sewer.	With Syke's patent pipes for sewer.	
G. Bell, Tottenham	£4,743 0 0	£4,599 0 0	£4,500 0 0	£971 0 0
D. T. Jackson, Barking	4,038 12 6	3,900 0 0	3,820 10 0	600 0 0
Surveyor's estimate	3,690 0 0	3,485 7 6	3,845 7 6	363 0 0

FLEETWOOD (Lancs.).—For the erection of a new boundary wall and contingent work, Mount Grounds, for the Urban District Council. Mr. E. Frobisher, C.E., Town Hall, Fleetwood. Quantities by surveyor :—
J. C. Barnes, Fleetwood £1,202 14 8

GOUDHURST.—For alterations and additions to Gore Court, Gondhurst, for Mr. T. B. Crewe. Mr. Fred. W. Foster, architect, 41, Bedford-row, W.C. :—
Martin, Horsmonden* £1,050

GUILDFORD.—For the construction of a new road from Stoke-road, for the Town Council. Mr. C. G. Mason, C.E., Tunis-gate, Guildford :—

Mitchell Bros.	£790	Streeter Bros., Meadrow, Godalming*	£641
E. A. Franks	679		
W. Norris	676		

GWENNAP (Cornwall).—For additions, &c., to Lanner Schools, for the School Board of Gwennap. Mr. Horace Collins, architect, Redruth. Quantities by architect :—
R. Jacobs, Redruth* £410
For Masonry only.
John Tiddy, Gwennap £320
For Carpentering and Joinery only.
W. C. Hooge, Redruth £147
Hooge & Co., Redruth 164

HORSHAM.—For the supply of Findon flints (600 cubic yards) for the Rural District Council. Mr. W. Dengate, surveyor, 58, Park-street, Horsham :—

No. of Division of Road.		Cubic Yards.	per Cubic Yard. s. d.
1	P. Tyrrell, Ashington*	40	8 0
2	A. Laker, West Grinstead*	100	10 6
3	" "	60	10 9
4	H. Francis, West Chillington*	120	11 0
5	" "	70	11 6
6	R. Rowland, Hampshires, Shipley*	60	11 6
7	" " "	80	11 0
8	" " "	70	10 6

[All broken Findon flints delivered to roadside.]

IPSWICH.—For the erection of stables, Wolsey-street, for the Town Council. Mr. E. Buckham, Borough Surveyor, Town Hall, Ipswich :—

Grimwood & Sons	£513 0	Chas. Bonett	£445 0
Parkington & Son	500 0	A. Sadler	420 0
Burgoyne & Sons	497 10	W. H. Heath*	407 0

[All of Ipswich.]

LLANBRADACH (Glam).—For the execution of road-making and sewerage works. Messrs. Rickards & Blosse, surveyors, Charles-street Chambers, Cardiff :—
E. H. Page,* Cardiff. Schedule of prices.

LONDON.—For proposed alterations and additions to No. 59, Montagu-square, W. Mr. Fred. W. Foster, architect, 41, Bedford-row, W.C. :—

Simmonds	£2,678	A. Bush	£2,662
Whitehead & Co., Ltd.	2,675	Courtney & Fairbairn	2,495

LONDON.—For alterations and additions to Nos. 2 and 3, Montagu-square W. Mr. Fred. W. Foster, architect, 41, Bedford-row, W.C. :—
B. Hubble* £3,575

LONDON.—For proposed alterations to No. 36, Queensborough-terrace, for Lady Kershaw. Mr. Fred. W. Foster, architect, 41, Bedford-row, W.C. :—
B. Holeyman & Co.* £247

LONDON.—For proposed alterations and additions to No. 7, Great Cumberland-place, W. Mr. Fred. W. Foster, architect, 41, Bedford-row, W.C. :—
B. C. Hubble* £3,250

LOWER GORNAL (near Sedgley).—For the extension of new girls' schools, Robert-street, Lower Gornal, for the Sedgley School Board. Mr. A. Ramsell, architect, Dudley :—

L. Jones	£3,370 0 0	Hilton & Caswell, Sedgley*	£2,966 14 3
Skett	3,090 0 0		
Case	3,070 0 0		
H. Gough	2,988 0 0	Dorse & Co.	2,863 0 0

LOWER GORNAL (near Sedgley).—For the erection of new assembly hall, shops, dwelling house, stabling, &c., Red Hall-road, Lower Gornal, for the Dudley Co-operative Society, Limited. Mr. A. Ramsell, architect, Dudley :—

H. Gough	£2,630 0 0	Whittaker & Co.	£2,523 0 0
Jakehean & Round	2,555 6 8	W. Slatee, Upper Gornal*	2,325 10 0
Webb Bros.	2,550 0 0		

MARYPORT (Cumberland).—For the erection of manufactory, stabling, &c., for the Maryport Brewery, Limited. Mr. C. Eaglesfield, architect, Maryport :—
Building.—W. Marshall, Maryport* ..
Joinery.—J. Kendall, Maryport* .....
Slating.—T. Mandle, Maryport* .....
Plastering.—T. Kirk, Maryport* .....
Plumbing.—T. Skelton, Maryport* ....
Painting and *Glazing.*—J. M'Kay, Maryport* ..... } £2,050
Musgrave & Co., Limited, Belfast, for stable fittings* .....

[*See also next page.*

MERTON.—For the erection of a mineral water manufactory at Morden-road, Merton, for Messrs. H. Tomlin & Co. Messrs. R. M. Chart & Son, architects, Croydon. Quantities by the architects :—

Stewart & Sons	£2,530	Whitehead Bros.	£2,225
E. Goulder	2,475	Parsons & Townsend	2,195
E. Burnand	2,445	J. Burges	2,100

MERTON.—For the erection of a granary at Christchurch-road, Merton, for Messrs. Russell & Wells. Messrs. R. M. Chart & Son, architects, Croydon :—

	Two-story Building.	One-story Building.
Whitehead Bros.	£563	£370
J. Burges*	545	340

MITCHAM.—For the erection of a pair of tenement houses, for the "Hope of Surrey" Lodge, M.U.I.O.O.F. Messrs. R. M. Chart & Son, architects, Croydon :—

Smith & Son	£989 0	Bacon	£897 17
E. J. Burnand	978 0	Burges	850 0
C. E. Haydon	893 15		

MITCHAM.—For relaying surface water-culvert and surface water-drain on the Inglemere Estate, Figgs Marsh, Mitcham. Messrs. R. M. Chart & Son, surveyors, Croydon :—

E. Iles £728 6 8

NORWICH.—For the erection of new smiths' and paint shop, at the New Mills Corporation Depot, Norwich. Mr. A. E. Collins, City Engineer :—

Name of Tenderer unknown	£605	H. Greengrass, Norwich	£573
T. Gill, Norwich	594	Chapman, Norwich‡	549

[City Engineer's estimate, £547.]

‡ Recommended for acceptance.

NORWICH.—For draining, paving, and other works in Mulberry Tree-yard, St. Benedict's, Norwich, and Mint-yard, Fishergate, Norwich. Mr. A. E. Collins, City Engineer :—

Mulberry Tree-yard.

G. Rackham £228 11
H. C. Greengrass, Norwich‡ 155 0
[City Engineer's estimate, £195 12s. 10d.]

Mint-yard.

G. Rackham £115 10
Greengrass‡ 69 10
[City Engineer's estimate, £94 12s. 3d.]
‡ Recommended for acceptance.

PORTLETHEN (N.B.).—For additions to school. Mr. R. G. Wilson, architect, 181A, Union-street, Aberdeen. Quantities by architect :—

Building.—Watt & Barron, Portlethen....
Carpentry.—Thomson & Sons, Bourtree-bush, near Stonehaven.....
Plumbing.—Thom & Strachan, Aberdeen.. } £410
Painting.—John Morrison, Portlethen ....
Plastering.—Sellow & Co., Aberdeen ....
Slating.—Adam & Son, Aberdeen .....

SEDGLEY.—For alterations and repairs to Upper Gornal Schools, for the Sedgley School Board. Mr. A. Ramsell, architect, Dudley :—

H. Gough	£160 0 0	J. T. Clarke, Upper Gornal*	£123 14 5

WESTCLIFF-ON-SEA.—For the erection of a small detached residence, stables, and coach-house, for Mr. J. Luke-Cocks. Messrs. Clark & Hutchinson, architects, 28, John-street, Bedford-row, W.C. :—

	House.	Stables.
A. J. Golding	£1,792	£298
Davis & Leaney	1,729	358
F. Smith	1,588	300
F. E. Woodhams	1,549	302
T. Lawford	1,390	240
E. Trew*	1,077	335

WILLINGTON QUAY.—For the execution of street works, Back Norman-terrace, &c., for the Urban District Council. Mr. J. Fleming Davidson, Engineer, Council Offices, Willington Quay :—

G. E. Simpson, Ellison-terrace, Newcastle* ..... }
G. Thornton, South Shields ..... } Schedule of Prices.
Geo. Maughan, Jarrow-on-Tyne .... }
H. Wardlaw, South Shields ..... }

WINDOVER.—For the erection of a convalescent home, Windover, Bucks, for Miss Soloman. Mr. Guest Luckett, architect, Aylesbury :—

Grist & Co.	£1,053 17 0	Tombs & Sons	£995 0 0
Cannon & Co.	1,048 0 0	Crook & Son	945 0 0
Senior & Clarke	1,022 16 6	Sherwin*	940 0 0
Holland, Windover	999 0 0	Holland, Waddesdon	925 0 0

WOODLAWN (Galway).—For the erection of house and out-offices, Tooreen, for Mr. C. O'Hara Trench. Mr. J. Smith, C.E., Ballinasloe :—

Thos. Egan	£1,600 0 0		
Matthew Cahill	1,500 0 0		
Connolly Bros.	1,417 6 7		

WRITTLE (Essex).—For four cottages, to be built at Oxney Green. Mr. R. Mawhood, architect, Chelmsford :—

H. Kennell	£998 0	J. Lowe, Writtle*	£792 10
J. Moss	875 0		

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